

# ONKYO® SERVICE MANUAL

## COMPACT DISC PLAYER MODEL DX-6850/MODEL DX-6870 DX-706 / DX-708



Black and Silver models

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\triangle$  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.

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**ONKYO**  
**AUDIO COMPONENTS**


# ONKYO® SERVICE MANUAL

## COMPACT DISC PLAYER MODEL DX-706/MODEL DX-708

### Black and Silver models

|         |                      |
|---------|----------------------|
| UDN, UD | 120V AC, 60 Hz       |
| UP      | 230V AC, 50Hz        |
| UW      | 120/220V AC, 50/60Hz |
| UQA     | 240V AC, 50 Hz       |

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  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.

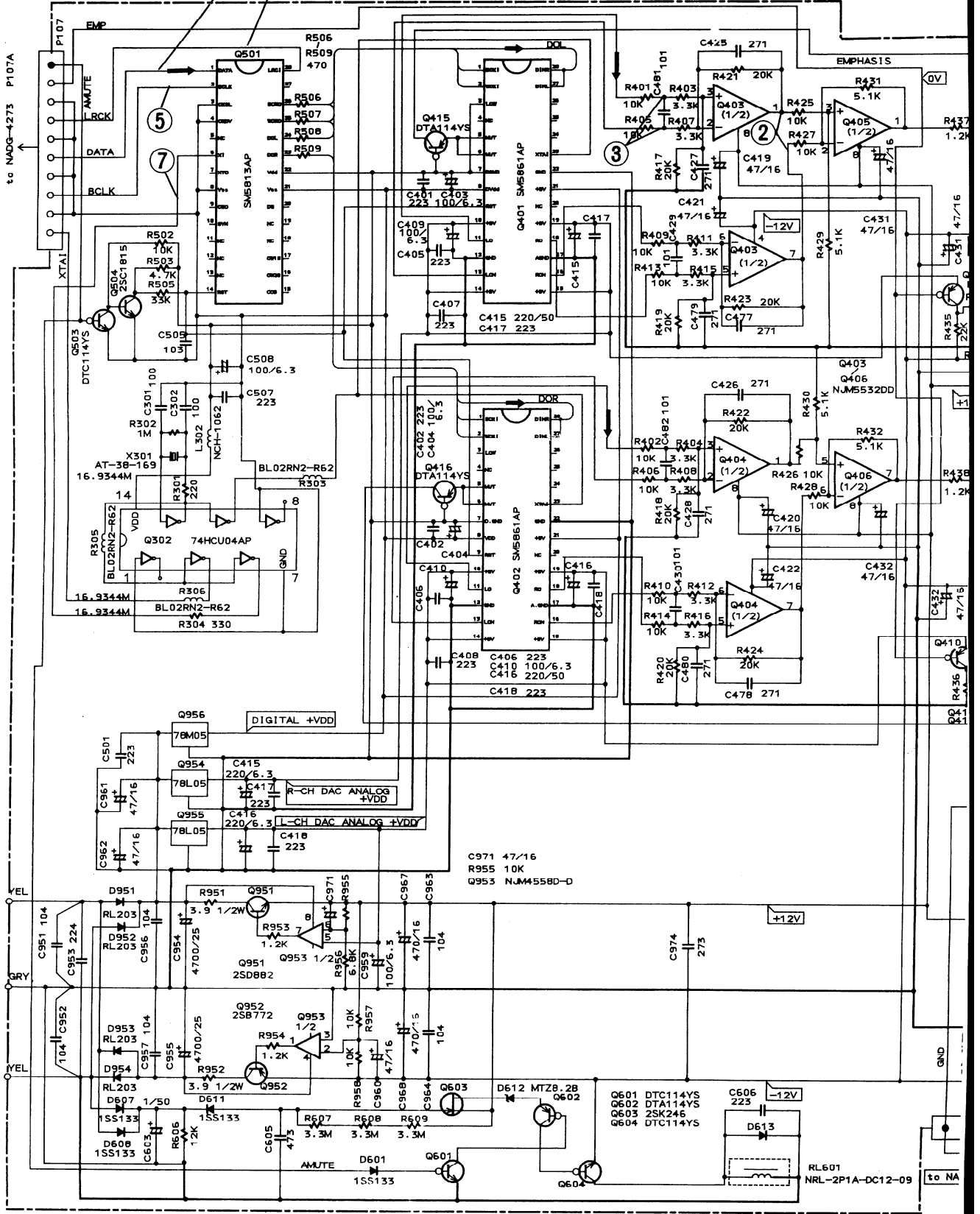
MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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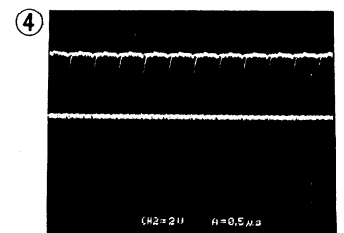
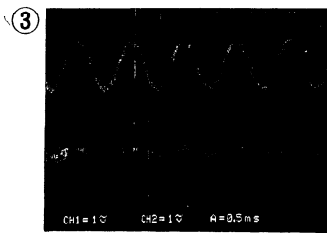
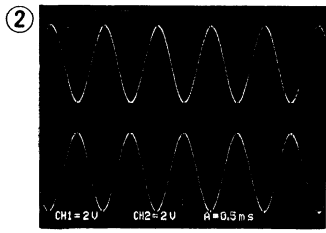
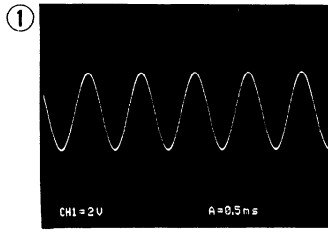
# SCHEMATIC DIAGRAM



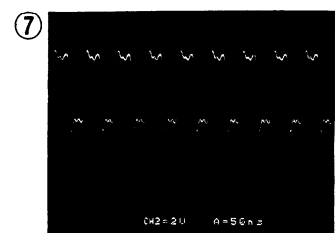
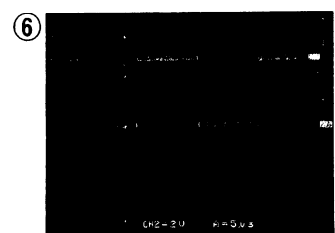
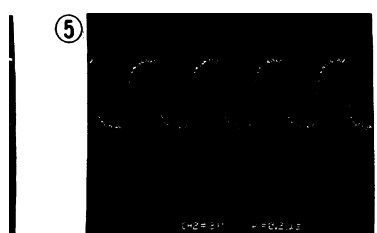
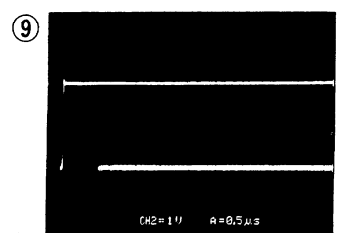
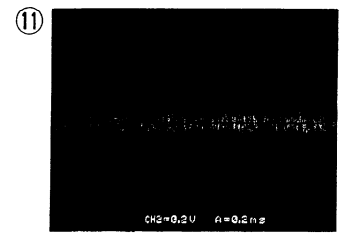
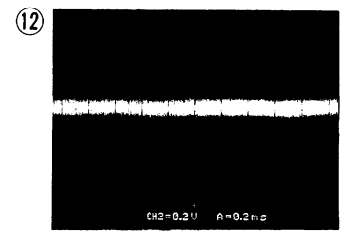
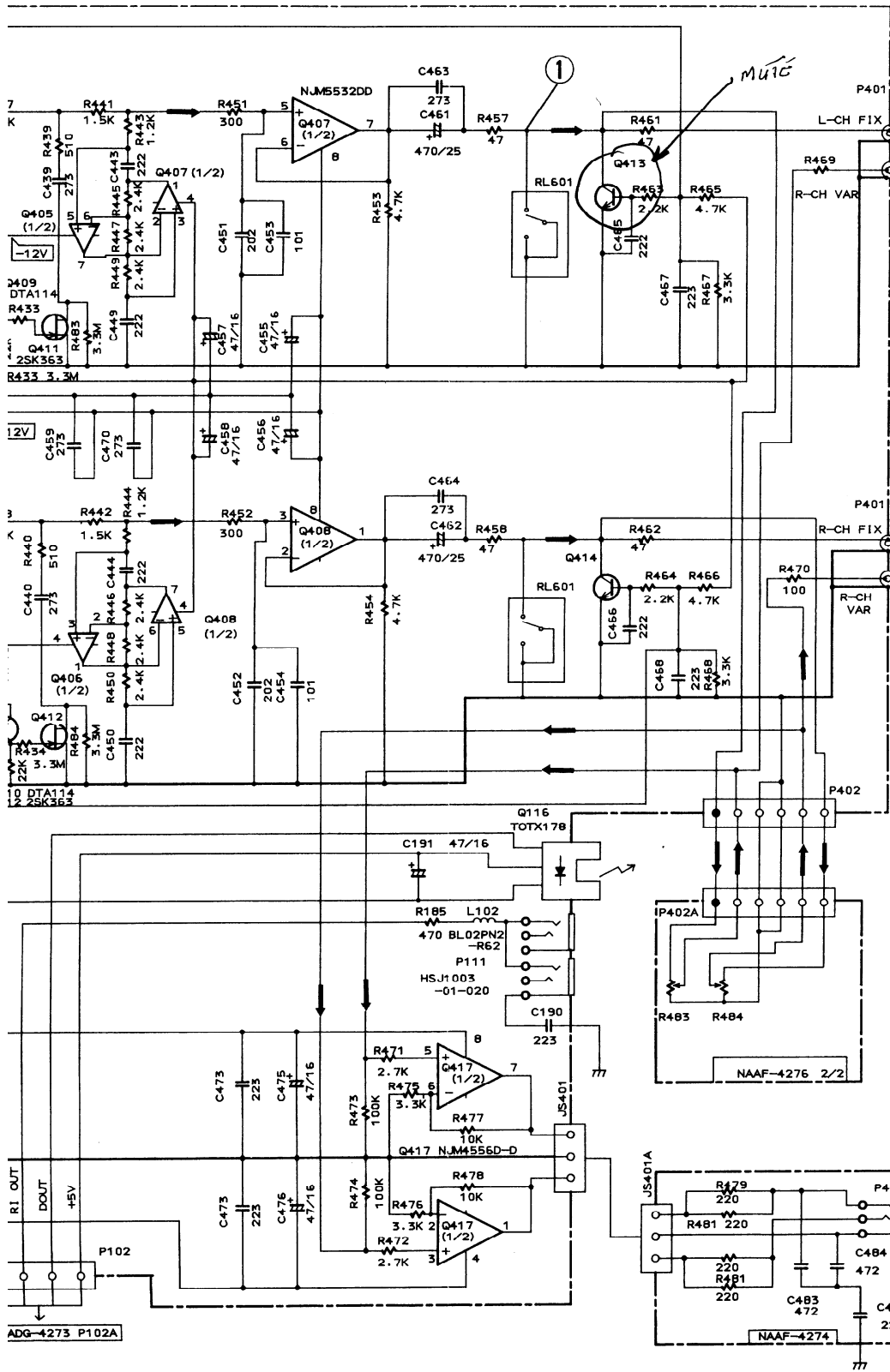
A  
B  
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1 2 3 4

4 6

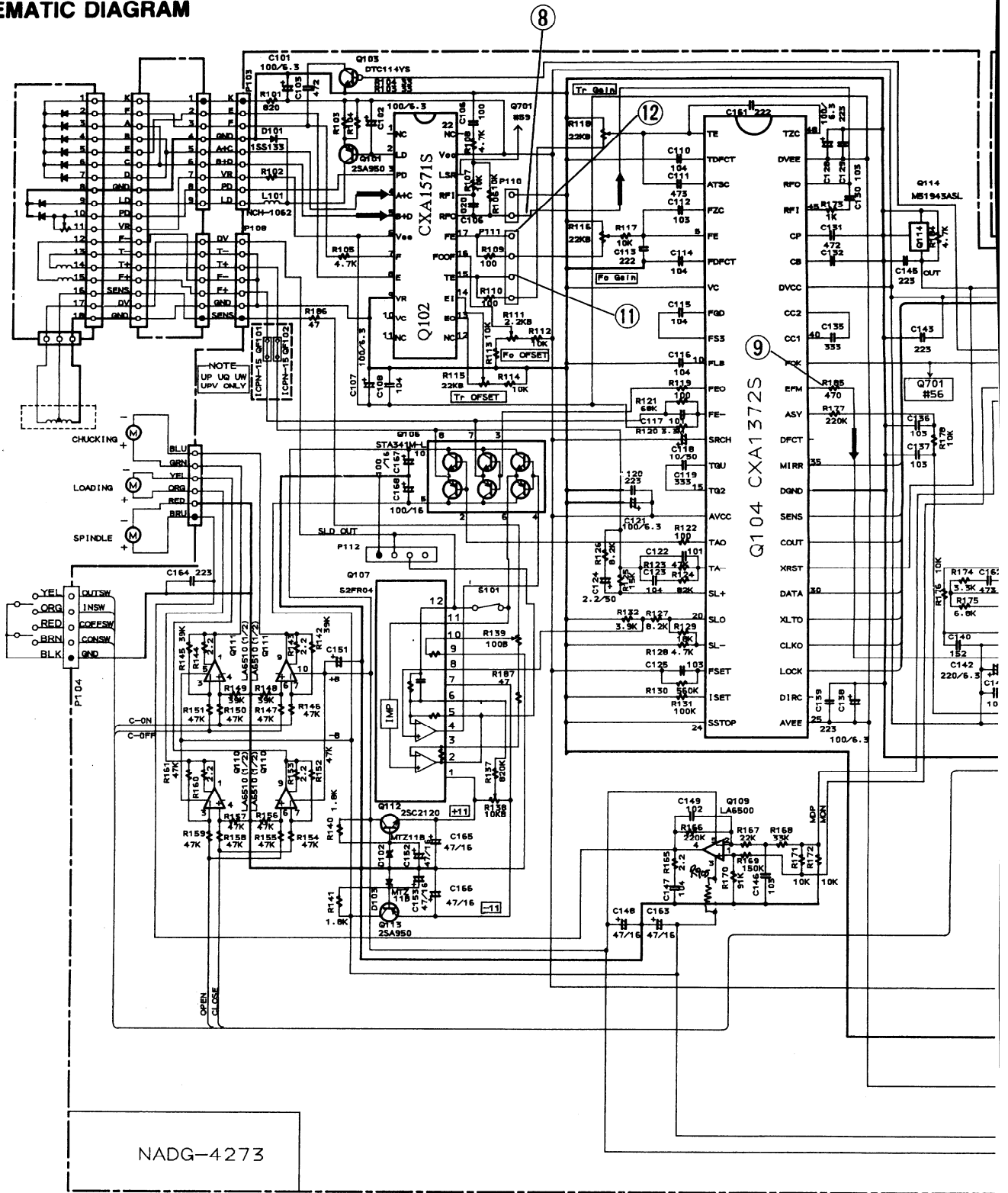


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# SCHEMATIC DIAGRAM

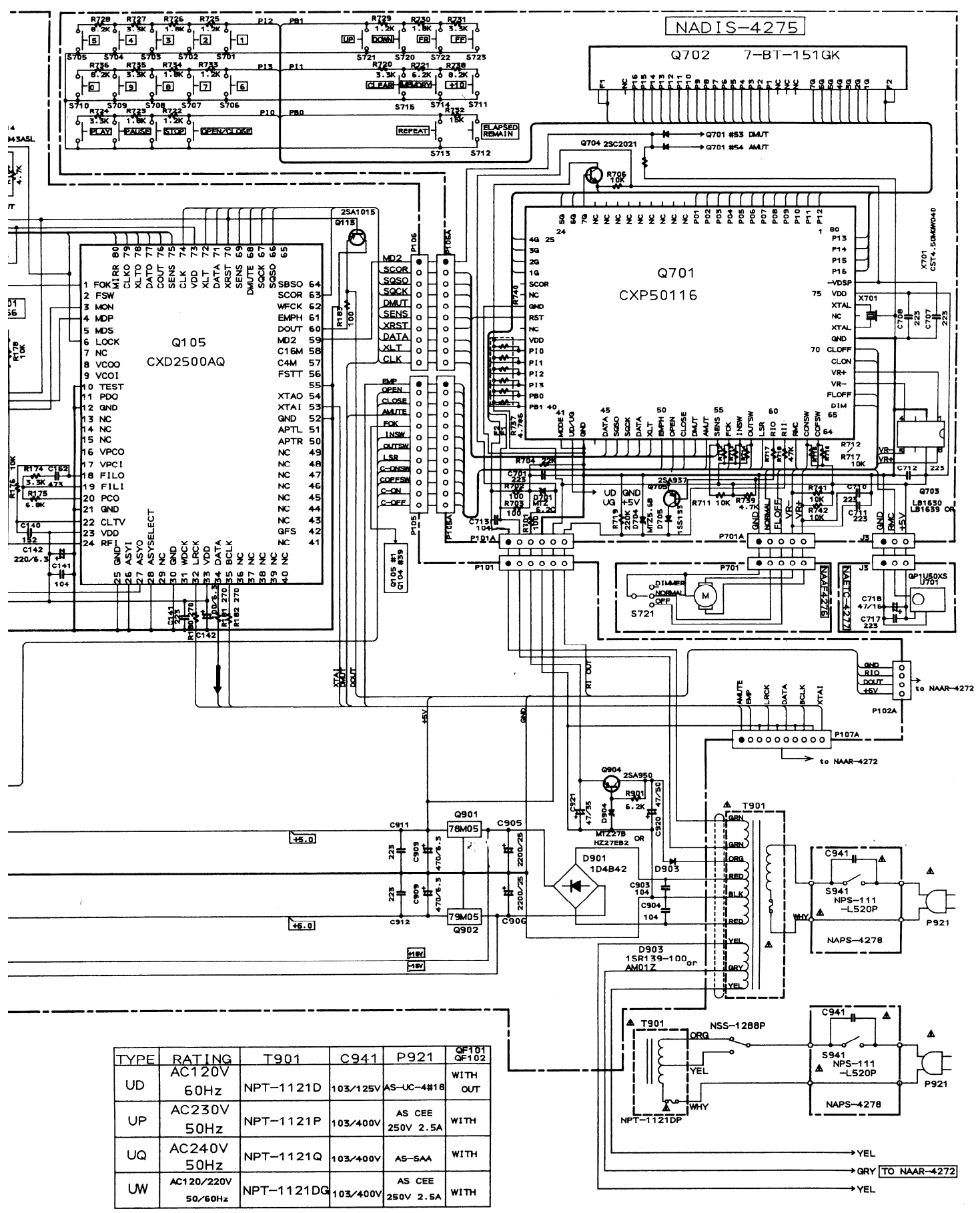


NADG-4273

## NOTE

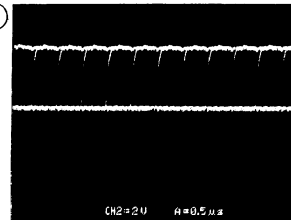
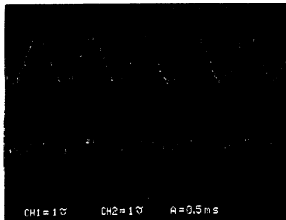
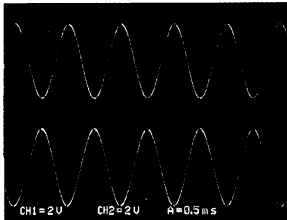
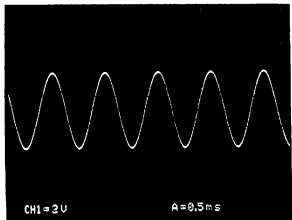
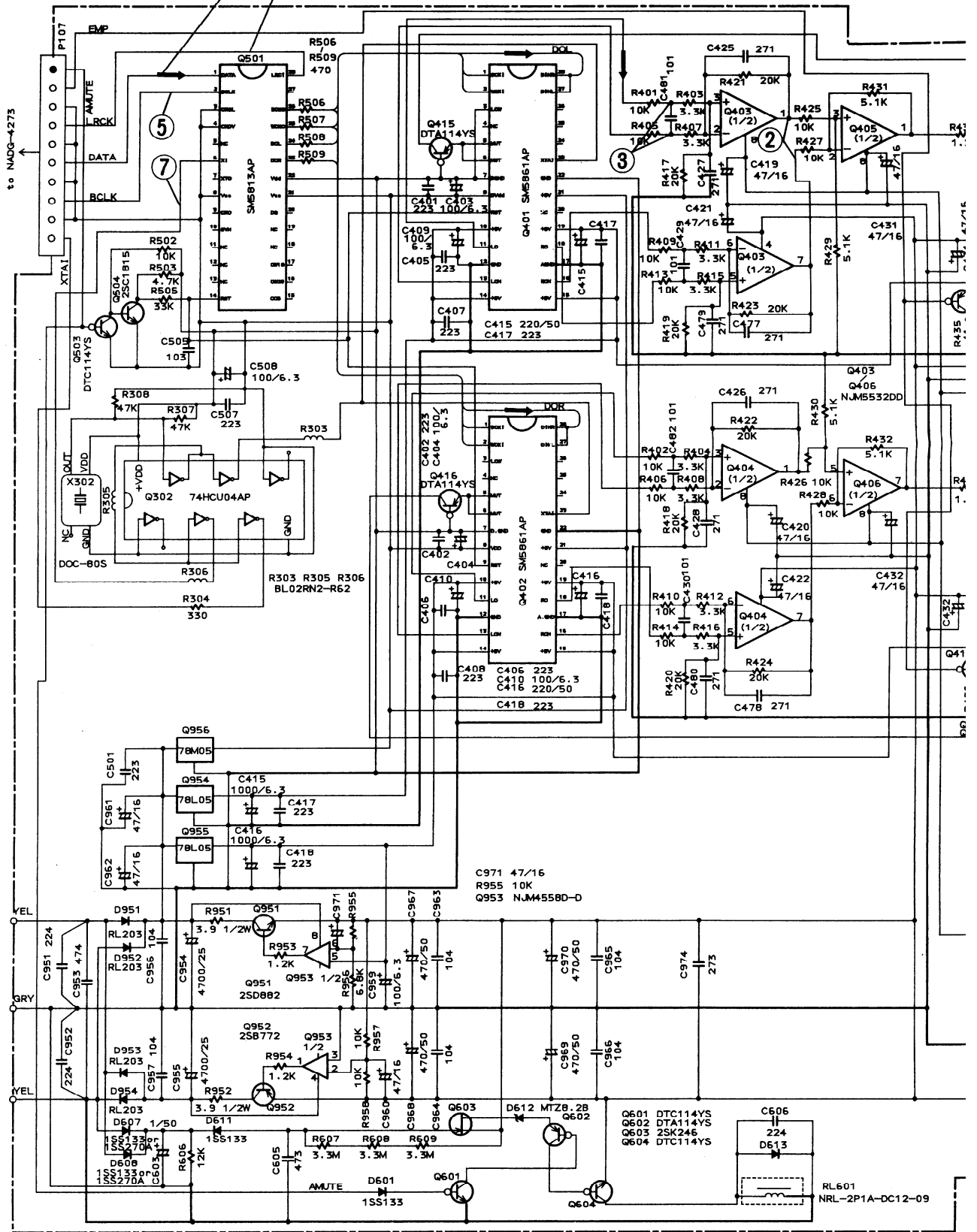
- THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER)  $\square$  IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS ( $\#$ ) ARE IN  $\mu$ F/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
- EX) 3pF  $\rightarrow$  030, 33pF  $\rightarrow$  330, 330pF  $\rightarrow$  331, 0.033 $\mu$ F  $\rightarrow$  333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
- EX)  $\leftarrow$  PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

DLOO2



| TYPE | RATING                | T901       | C941     | P921                | QF101<br>QF102 |
|------|-----------------------|------------|----------|---------------------|----------------|
| UD   | AC120V<br>60Hz        | NPT-1121D  | 103/125V | AS-UC-4#18          | WITH<br>OUT    |
| UP   | AC230V<br>50Hz        | NPT-1121P  | 103/400V | AS CEE<br>250V 2.5A | WITH           |
| UQ   | AC240V<br>50Hz        | NPT-1121Q  | 103/400V | AS-SAA              | WITH           |
| UW   | AC120/220V<br>50/60Hz | NPT-1121DQ | 103/400V | AS CEE<br>250V 2.5A | WITH           |

SCHEMATIC DIAGRAM



A  
B  
C  
D  
E  
F

1 2 3 4

④ ⑥

③

⑤

⑦

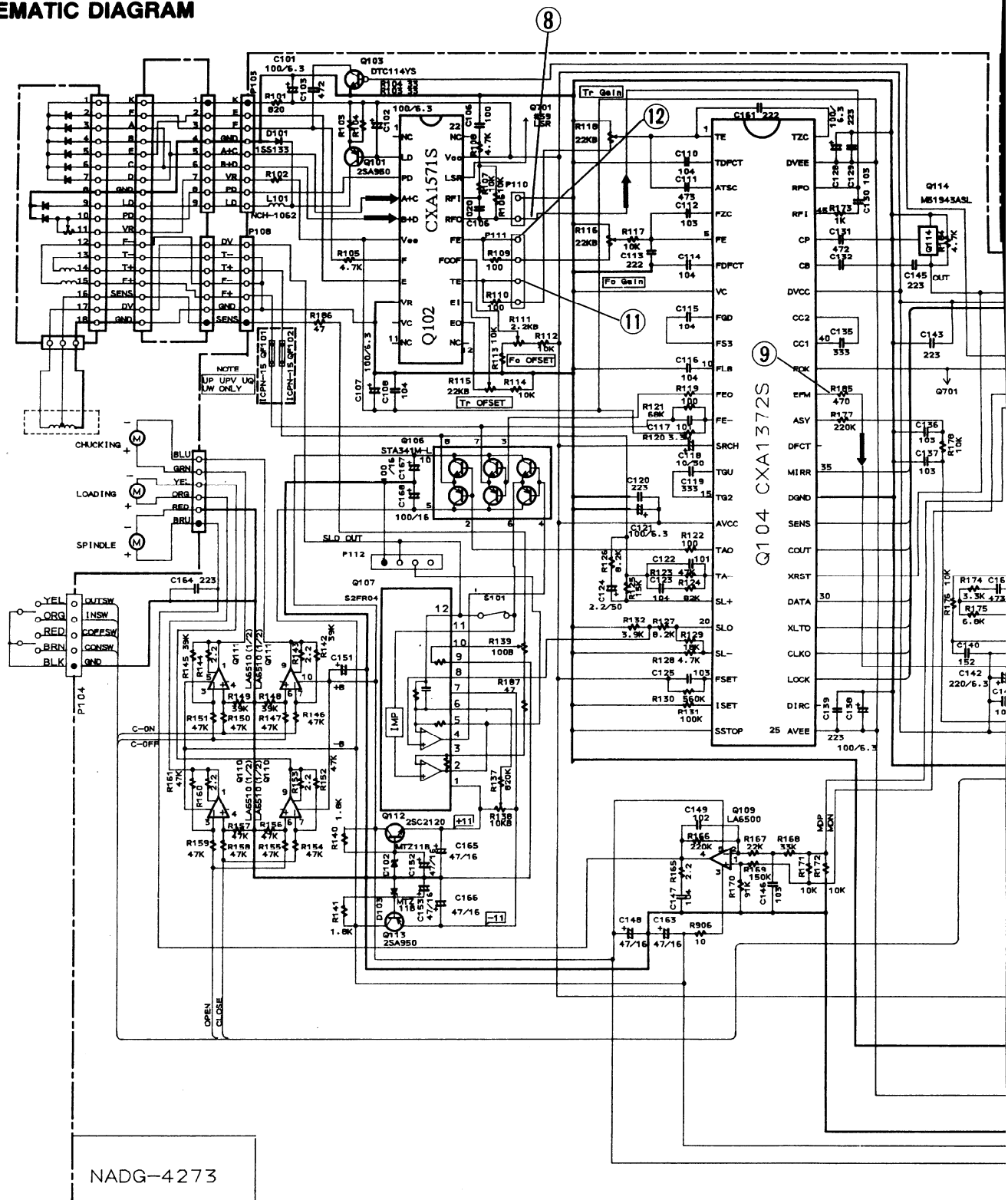
④





# SCHEMATIC DIAGRAM

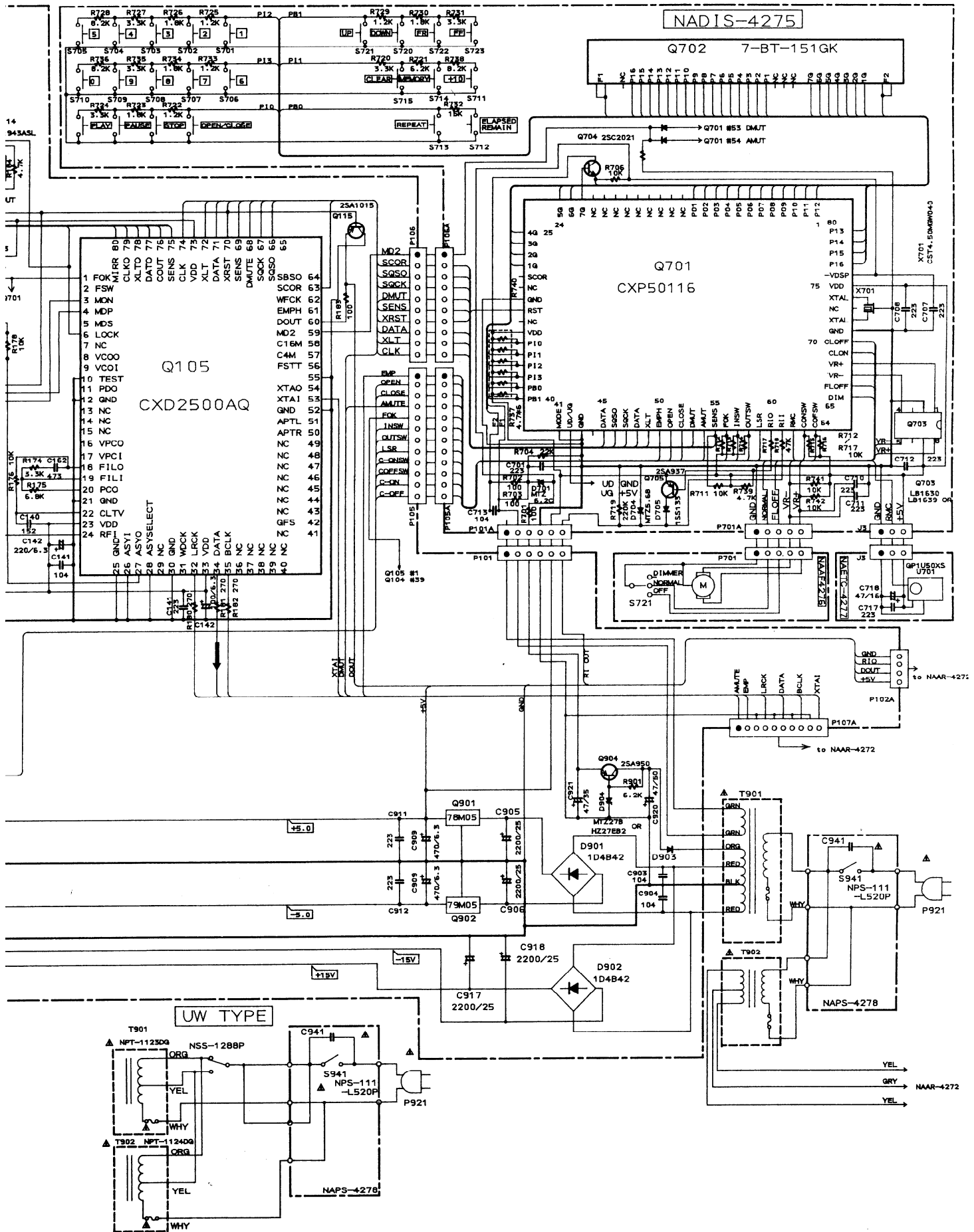
A  
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NADG-4273

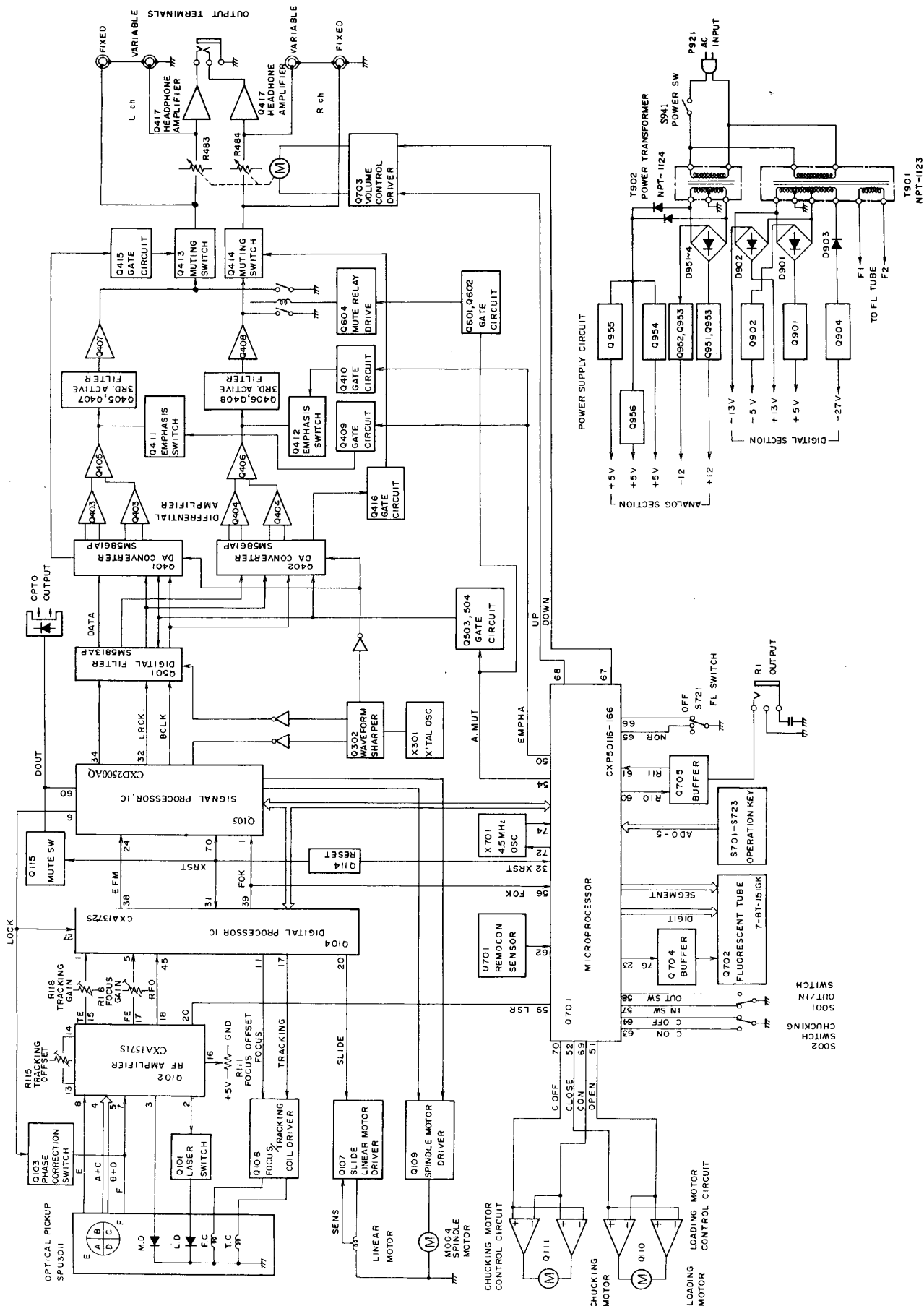
- NOTE**
- THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
  - VOLTAGE (MEASURED WITH VOLTMETER) C1 IS DC VOLTAGE, (NO INPUT SIGNAL)
  - ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
  - ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
  - ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
  - ELECTROLYTIC CAPACITORS ( $\Psi$ ) ARE IN  $\mu$ F/WV.
  - ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED.
  - EXJ3pF-030, 33pF-330, 330pF-331, 0, 033 $\mu$ F-333
  - ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
  - THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
  - EXCEPT PRINTING SIDE
  - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

| TYPE | RATING                | T901       | C941         | P921               | Q182        | T902       |
|------|-----------------------|------------|--------------|--------------------|-------------|------------|
| UD   | AC120V<br>60Hz        | NPT-1123D  | 103/<br>125V | AS-UC-<br>#18      | WITH<br>OUT | NPT-1124D  |
| UP   | AC230V<br>50Hz        | NPT-1123P  | 103/<br>400V | AS CEE<br>250V2.5A | WITH        | NPT-1124P  |
| UQ   | AC240V<br>50Hz        | NPT-1123Q  | 103/<br>400V |                    | WITH        | NPT-1124Q  |
| LW   | AC120/220V<br>50/60Hz | NPT-1123DG | 103/<br>400V | AS CEE<br>250V2.5A | WITH        | NPT-1124DG |



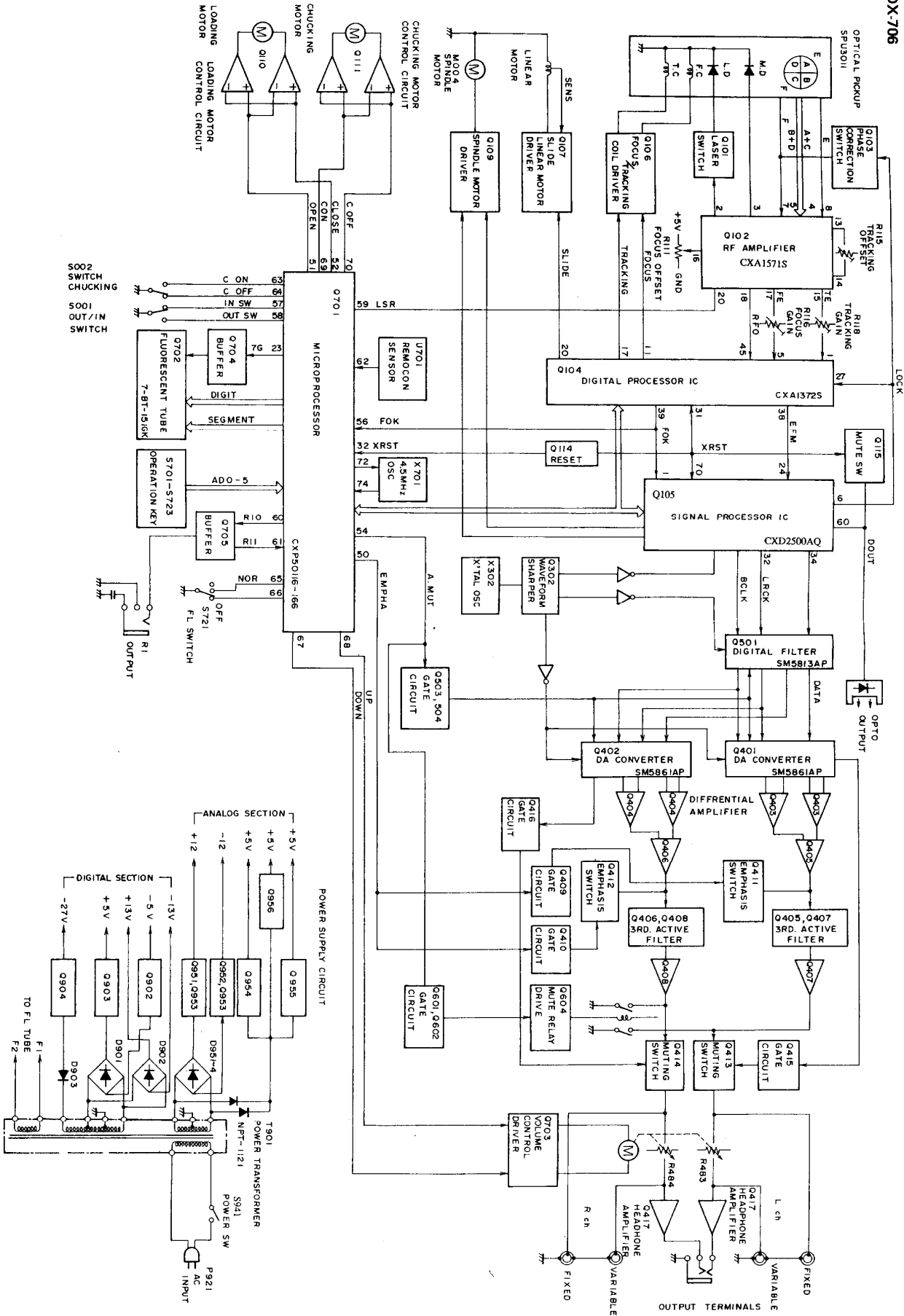
# BLOCK DIAGRAM

MODEL DX-708



# BLOCK DIAGRAM

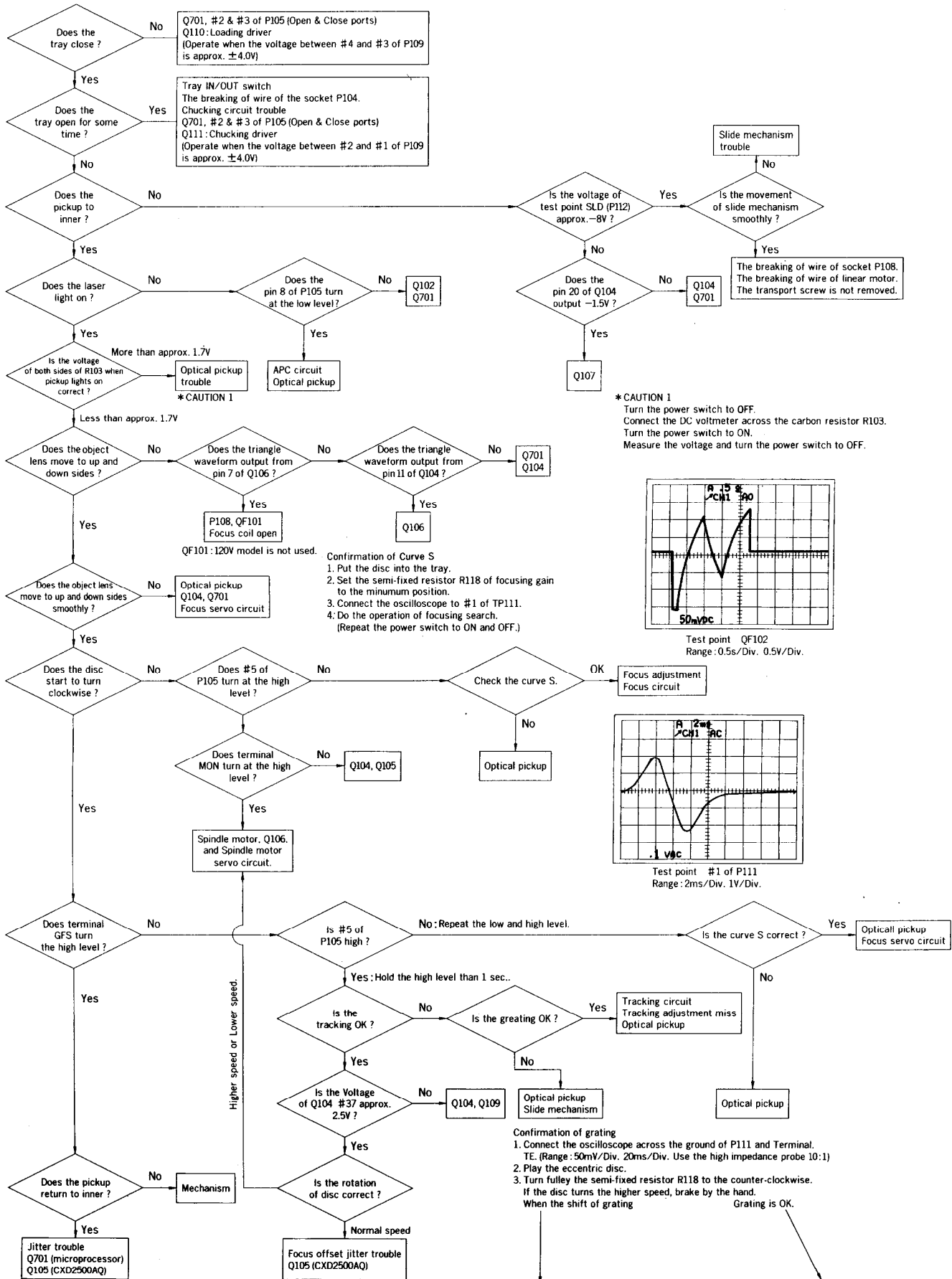
MODEL DX-706



DA-100/706 DA-100/706

# TROUBLESHOOTING GUIDE

- 23 -



- 24 -



# SPECIFICATIONS

## Model DX-706

|                            |   |
|----------------------------|---|
| Signal readout system:     | Optical non-contact                             |
| Reading rotation:          | About 500-200 r.p.m. (constant linear velocity) |
| Linear velocity:           | 1.2-1.4m/s                                      |
| Error correction system:   | Cross interleave Reed Solomon code              |
| D/A converter:             | 1 BIT PWM × 2 AccuPulse Quartz System           |
| Sampling frequency:        | 352.8kHz (eight-times oversampling)             |
| Number of channels:        | 2 (stereo)                                      |
| Frequency response:        | 2 Hz-20kHz                                      |
| Total harmonic distortion: | 0.0020% (at 1 kHz)                              |
| Dynamic range:             | 100dB   |
| Signal to noise ratio:     | 110dB   |
| Channel separation:        | 110dB (at 1 kHz)                                |
| Wow and Flutter:           | Below threshold of measurability                |
| Output level:              | 2 volts r.m.s.                                  |

|                     |  |
|---------------------|--|
| Power consumption:  | 21 watts                                       |
| Dimensions (W×H×D): | 445×130×364mm<br>17-15/16" × 5-1/8" × 14-5/16" |
| Weight:             | 8kg, 17.6 lbs.                                 |

## DX-708

|                            |   |
|----------------------------|---|
| Signal readout system:     | Optical non-contact                             |
| Reading rotation:          | About 500-200 r.p.m. (constant linear velocity) |
| Linear velocity:           | 1.2-1.4m/s                                      |
| Error correction system:   | Cross interleave Reed Solomon code              |
| D/A converter:             | 1 BIT PWM × 2 AccuPulse Quartz System           |
| Sampling frequency:        | 352.8kHz (eight-times oversampling)             |
| Number of channels:        | 2 (stereo)                                      |
| Frequency response:        | 2 Hz-20kHz                                      |
| Total harmonic distortion: | 0.0020% (at 1 kHz)                              |
| Dynamic range:             | 100dB   |
| Signal to noise ratio:     | 110dB   |
| Channel separation:        | 110dB (at 1 kHz)                                |
| Wow and Flutter:           | Below threshold of measurability                |
| Output level:              | 2 volts r.m.s.                                  |

|                     |  |
|---------------------|--|
| Power consumption:  | 21 watts                                       |
| Dimensions (W×H×D): | 455×130×364mm<br>17-15/16" × 5-1/8" × 14-5/16" |
| Weight:             | 8.8kg, 19.4 lbs.                               |

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

## SERVICE PROCEDURES

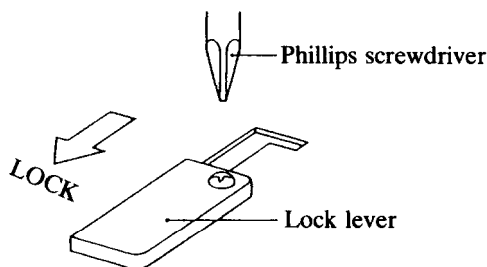
### 1. How to Release the Transport Lock

To protect the optical assembly including the laser pickup from vibration related damage during shipping, this unit is equipped with a transport lock lever located on the base.

- Loosen the screw with Phillips screwdriver.
- Move the lock lever in the direction opposite that shown by the arrow. Move the lever up to the position where it can move no farther, and then remove the lever.

### ■ Tighten the screw to secure the lock lever.

- For shipping, restore the lock lever to its position in the direction of the arrow, then tighten down the screw to secure the lock lever in that position.



### 2. Use of batteries

- The remote control transmitter is powered by two batteries. Before using this unit for the first time, insert the two batteries (included).
- Average battery life is about one year. This period may be shorter depending on the frequency of use and environment (temperature and humidity) in which the remote control transmitter is used.

- If the remote control transmitter does not operate even though front panel controls function normally, the batteries should be replaced. Use only listed in the following chart.

| Type      | Voltage | Size             |
|-----------|---------|------------------|
| Manganese | 1.5V    | AA<br>R6<br>UM-3 |

### 3. Safety check out

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

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

Specifications: more than 10Mohm at 500V.

### 4. Voltage selector (rear panel)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this selector to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by turning the voltage selector with a screwdriver or similar instrument to the 120V or 220V position. Confirm that the selector has been set to the correct position before turning the power switch on. If there is no voltage selector switch on the unit you have purchased, it can only be used in areas where the power supply voltage is the same as that of the unit.

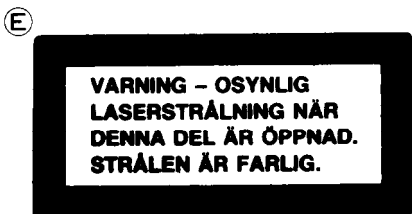
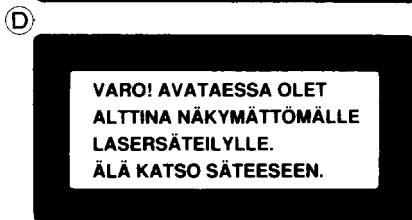
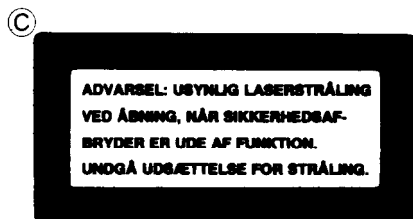
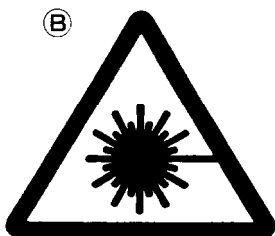
# LASER WARNING LABEL

The label shown below are affixed.

## 1. Warning label

This label is located on the arm of mechanism.

**(A)**  
**DANGER** — INVISIBLE LASER RADIATION  
 WHEN OPEN AND INTERLOCK FAILED OR  
 DEFEATED. AVOID DIRECT EXPOSURE TO BEAM  
**CAUTION** — HAZARDOUS LASER AND  
 ELECTROMAGNETIC RADIATION WHEN OPEN  
 AND INTERLOCK DEFEATED  
**ATTENTION** — RAYONNEMENT LASER  
 ET ELECTROMAGNETIQUE DANGEREUX SI  
 OUVERT AVEC L'ECLANCHEMENT DE SECURITE  
 ANNULE.



**(A)** : Danger label

**(B)** : Except 120V model

**(C), (D), (E)** : Only 230V model

## 2. Certification label (120V model)

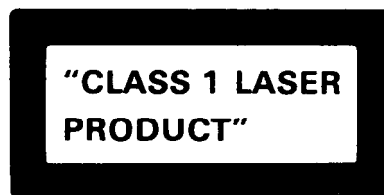
This label is located on the back panel.

PRODUCT IS CERTIFIED BY THE MANUFACTURER TO COMPLY WITH DHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT THE DATE OF MANUFACTURE.

MANUFACTURED

## 3. Class 1 label (Except 120V model)

This label is located on the back panel.



ADVARSEL

Denne mærkning er anbragt på apparatets højre side og indikerer, at apparatet arbejder med laserstråler af klasse 1, hvilket betyder, at der anvendes laserstråler af svageste klasse, og at man ikke på apparatets yderside kan blive udsat for utilsigelig kraftig stråling.

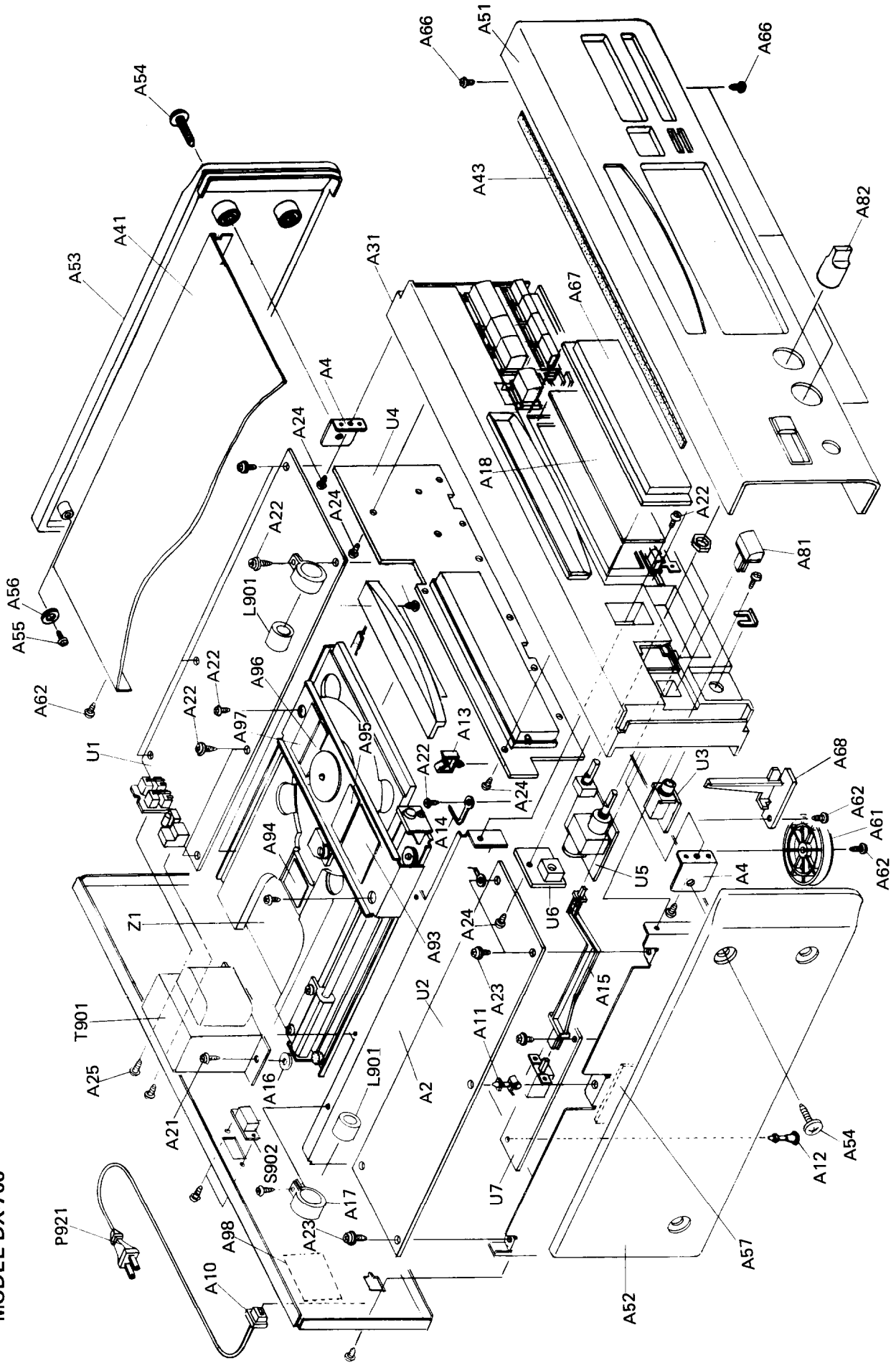
APPARATET BØR KUN ÅBNES AF FAGFOLK MED SÆRLIGT KENDSKAB TIL APPARATER MED LASERSTRÅLER!

Indvendigt i apparatet er anbragt den her gengivne advarselsmærkning, som advarer imod at foretage sådanne indgreb i apparatet, at man kan komme til at udsætte sig for laserstråling.

VAROITUS! Laite sisältää laserdiodin, joka lähettää (näkyttöä) silmille vaarallista lasersäteilyä.

# CHASSIS-EXPLODED VIEW

MODEL DX-706





# PARTS LIST

## MODEL DX-706

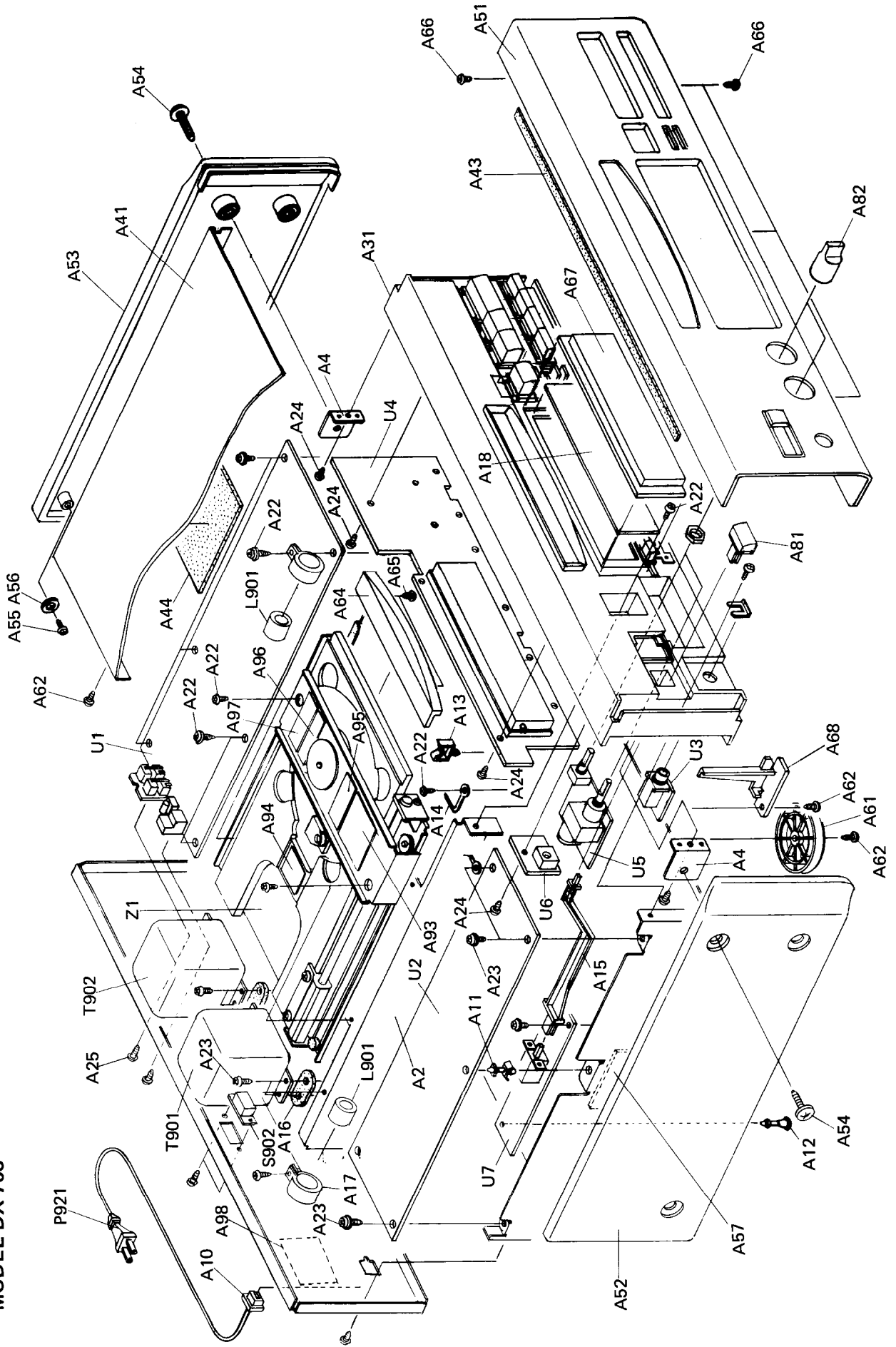
| REF.NO. | PART NO.  | DESCRIPTION                     | REF.NO. | PART NO.     | DESCRIPTION                                      |
|---------|-----------|---------------------------------|---------|--------------|--|
| A1      | 27100248A | Chassis                         | A95     | 29360811A    | Label <P>  |
| A2      | 27130660B | Bracket C                       | A96     | 29361298     | Label SEM <P>                                    |
| A4      | 27141496  | Bracket S                       | A97     | 29361342     | Label SEM/FIN <P>                                |
| A8      | 27121503  | Back panel <D>                  | A98     | 29360687     | Label CLASS1 <P/W/Q>                             |
|         | 27121504  | Back panel <P>                  | A99     | 28175189     | Insulator plate <S>                              |
|         | 27121506  | Back panel <W>                  | L901    | 230910       | ESD-R-25DB,Core                                  |
|         | 27121511  | Back panel <Q>                  | P921    | 253161,      | AS-UC-6#18,                                      |
| A10     | 27300750  | Bushing,cord                    |         | 253168 or    | Power supply cord                                |
| A11     | 27190009  | KGLS-4S,Holder                  |         | 253146       | <D>  |
| A12     | 27190524  | KGLS-14R,Holder                 |         | 253149       | AS-CEE,250V 2.5A,                                |
| A13     | 27300833  | Clamp                           |         |              | Power supply cord <P/W>                          |
| A14     | 27255004  | Clip                            |         | 253170       | AS-SAA,Power supply cord <Q>                     |
| A15     | 27273142  | Joint, power                    | S902    | 25065195     | NSS-1288P,Voltage selector switch <W>            |
| A16     | 27270327A | Spacer                          | T901    | 2300727A     | NPT-1121D,Power transformer <D>                  |
| A17     | 27190608  | Holder,clamp                    |         | 2300728A     | NPT-1121P,Power transformer <P>                  |
| A18     | 28133269  | Back plate                      |         | 2300729A     | NPT-1121DG,Power transformer <W>                 |
| A21     | 830440109 | 4TTC+10C(BC),Self-tapping screw | U1      | 2300734A     | NPT-1121Q,Power transformer <Q>                  |
| A22     | 834430088 | 3TTS+8B(BC),Self-tapping screw  | U2      | IHI169572-1  | NAAR-4272-1,Main circuit pc board ass'y          |
| A23     | 831130088 | 3TTW+8B,Self-tapping screw      |         | IHI169573-1  | NADG-4273-1,Digital circuit pc board ass'y <D>   |
| A24     | 833430080 | 3TTP+8P(BC),Self-tapping screw  | U3      | IHI169574-1  | NAAF-4274-1,Headphone terminal pc board ass'y    |
| A25     | 801230    | 3STS+8BQ(BC),Self-tapping screw | U4      | IHI169575-1  | NADIS-4275-1,Display circuit pc board ass'y <D>  |
| A31     | 27110659B | Front bracket ass'y <B>         |         | IHI169575-1A | NADIS-4275-1A,Display circuit pc board ass'y <D> |
|         | 27110660A | Front bracket ass'y <S>         | U5      | IHI169576-1  | NAAF-4276-1,Output volume pc board ass'y         |
| A41     | 28184490A | Top cover                       | U6      | IHI169577-1  | NAETC-4277-1,Sensor pc board ass'y               |
| A43     | 28140837  | 0.9 × 250 × 10mm,Cushion        | U7      | IHI169578-1  | NAPS-4278-1,Power supply pc board ass'y          |
| A44     | 28141009  | 1.5 × 195 × 125mm,Cushion       | Z1      | 260208       | NCD-39M,Mechanism ass'y                          |
| A51     | IHI69121  | Front panel ass'y <B>           |         |              | Binder   |
|         | IHI70121  | Front panel ass'y <S>           |         |              |  |
| A52     | 28185371  | Side panel L                    |         |              |  |
| A53     | 28185372  | Side panel R                    |         |              |  |
| A54     | 837440169 | 4TTC+16C(BC),Self-tapping screw |         |              |  |
| A55     | 834440088 | 4TTS+8B(BC),Self-tapping screw  |         |              |  |
| A56     | 87644012  | W4 × 12F(BC),Washer             |         |              |  |
| A57     | 28175190  | Insulator plate                 |         |              |  |
| A61     | 27175254  | Leg                             |         |              |  |
| A62     | 834430088 | 3TTS+8B(BC),Self-tapping screw  |         |              |  |
| A64     | 28148256  | Tray panel <B>                  |         |              |  |
|         | 28148258  | Tray panel <S>                  |         |              |  |
| A65     | 838430068 | 3TTB+6B(BC),Self-tapping screw  |         |              |  |
| A66     | 833430080 | 3TTP+8P(BC),Self-tapping screw  |         |              |  |
| A67     | 28191604A | Clear plate                     |         |              |  |
| A68     | 28335034A | Lever, lock                     |         |              |  |
| A81     | 28324397  | Knob, power <B>                 |         |              |  |
|         | 28324398  | Knob, power <S>                 |         |              |  |
| A82     | 28324492  | Knob, level <B>                 |         |              |  |
|         | 28324493  | Knob, level <S>                 |         |              |  |
| A93     | 29360807  | Label DANGER                    |         |              |  |
| A94     | 29361218  | Label LASER <P/W/Q>             |         |              |  |

NOTE: <D>:Only 120V model  
 <P>:Only 230V model  
 <W>:Only Worldwide model  
 <Q>:Only 240V model  
 <B>:Only Black model  
 <S>:Only Silver model

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$   
 ARE CRITICAL FOR RISK OF FIRE AND  
 ELECTRIC SHOCK. REPLACE ONLY WITH  
 PART NUMBER SPECIFIED.

# CHASSIS-EXPLODED VIEW

MODEL DX-708



# PARTS LIST

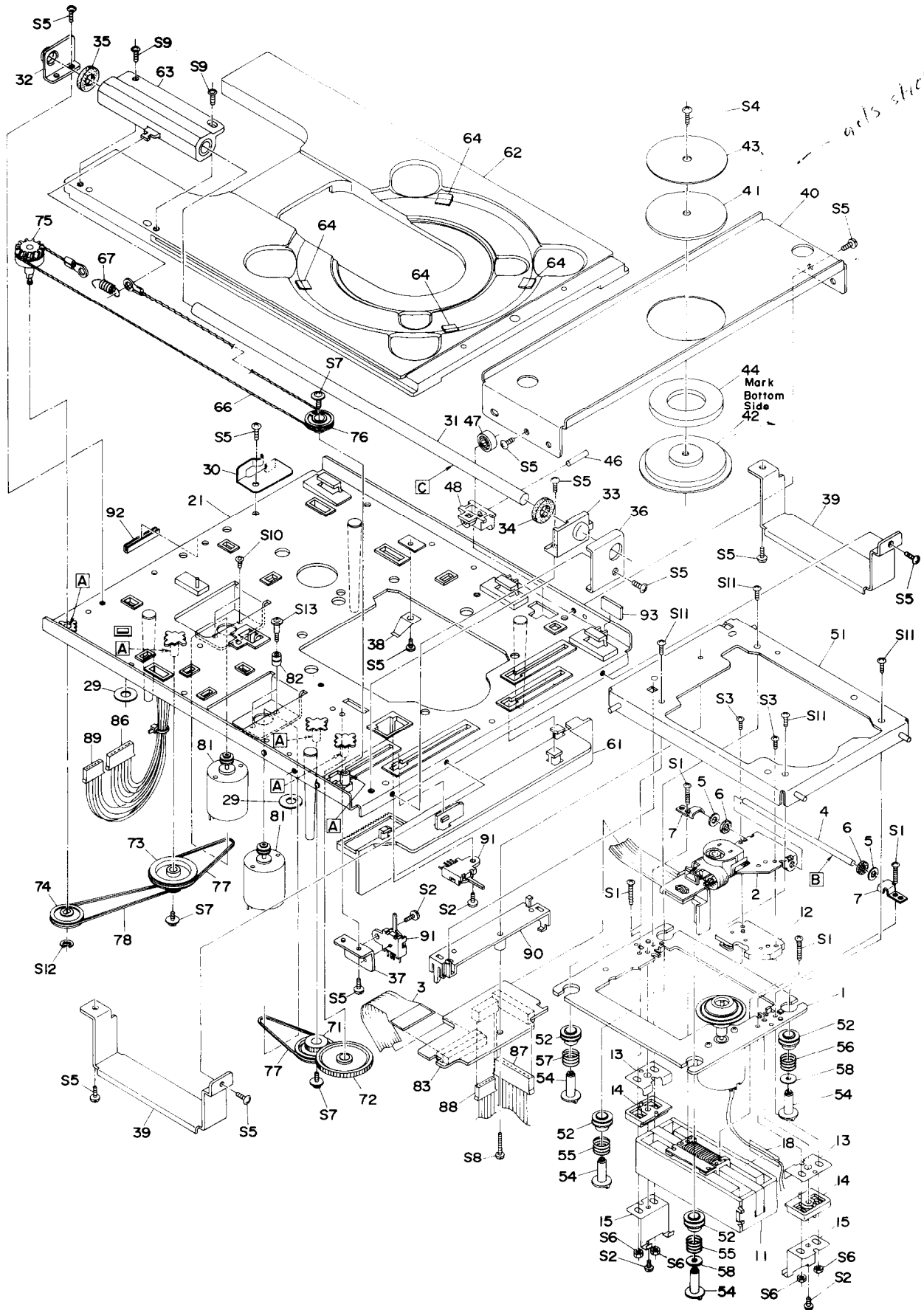
## MODEL DX-708

| REF.NO. | PART NO.  | DESCRIPTION                      | REF.NO. | PART NO.                 | DESCRIPTION   |
|---------|-----------|----------------------------------|---------|--------------------------|---|
| A1      | 27100249A | Chassis                          | P921    | 253161, 253168 or 253146 | AS-UC-6#18, Power supply cord <D>                     |
| A2      | 27130661A | Bracket C                        |         | 253149                   | AS-CEE 250V 2.5A, Power supply cord <P/W>             |
| A4      | 27141496  | Bracket S                        |         | 253170                   | AS-SAA, Power supply cord <Q>                         |
| A8      | 27121507  | Back panel <D>                   |         | 25065195                 | NSS-1288P, Voltage selector switch <W>                |
|         | 27121508  | Back panel <P>                   | S902    | 2300735                  | NPT-1123D, Power transformer <D>                      |
|         | 27121510  | Back panel <W>                   | T901    | 2300736                  | NPT-1123P, Power transformer <P>                      |
|         | 27121512  | Back panel <Q>                   |         | 2300737                  | NPT-1123DG, Power transformer <W>                     |
| A10     | 27300750  | Bushing, cord                    |         | 2300738                  | NPT-1123Q, Power transformer <Q>                      |
| A11     | 27190009  | KGLS-4S, Holder                  |         | 2300739                  | NPT-1124D, Power transformer <D>                      |
| A12     | 27190524  | KGLS-14R, Holder                 | T902    | 2300740                  | NPT-1124P, Power transformer <P>                      |
| A13     | 27300833  | Clamp                            |         | 2300741                  | NPT-1124DG, Power transformer <W>                     |
| A14     | 27255004  | Clip                             |         | 2300742                  | NPT-1124Q, Power transformer <Q>                      |
| A15     | 27273142  | Joint, power                     |         | 1H173572-2               | NAAR-4272-2, Main circuit pc board ass'y              |
| A16     | 27270327A | Spacer                           | U1      | 1H173573-2               | NADG-4273-2, Digital circuit pc board ass'y <D>       |
| A17     | 27190608  | Holder, clamp                    | U2      | 1H173573-2A              | NADG-4273-2A, Digital circuit pc board ass'y <P/W/Q>  |
| A18     | 28133269  | Back plate                       |         | 1H173574-2               | NAAF-4274-2, Headphone terminal pc board ass'y        |
| A21     | 838440109 | 4TTB+10C(BC), Self-tapping screw | U3      | 1H173575-2               | NADIS-4275-2, Display circuit pc board ass'y <D>      |
| A22     | 834430088 | 3TTS+8B(BC), Self-tapping screw  | U4      | 1H173575-2A              | NADIS-4275-2A, Display circuit pc board ass'y <P/W/Q> |
| A23     | 834130088 | 3TTW+8B, Self-tapping screw      | U5      | 1H173576-2               | NAEAF-4276-2, Output volume pc board ass'y            |
| A24     | 833430080 | 3TTP+8P(BC), Self-tapping screw  | U6      | 1H173577-2               | NAETC-4277-2, Sensor pc board ass'y                   |
| A25     | 801230    | 3STS+8BQ(BC), Self-tapping screw | U7      | 1H173578-2               | NAES-4278-2, Power supply pc board ass'y              |
| A31     | 27110659B | Front bracket ass'y              | Z1      | 260208                   | NCD-39M, Mechanism ass'y                              |
| A41     | 28184490A | Top cover                        |         |                          | Binder  |
| A43     | 28140837  | 0.9 × 250 × 10mm, Cushion        |         |                          |   |
| A44     | 28141009  | 1.5 × 195 × 125mm, Cushion       |         |                          |   |
| A51     | 1H173121  | Front panel ass'y                |         |                          |   |
| A52     | 28185371  | Side panel L                     |         |                          |   |
| A53     | 28185372  | Side panel R                     |         |                          |   |
| A54     | 837440169 | 4TTC+16C(BC), Self-tapping screw |         |                          |   |
| A55     | 834440088 | 4TTS+8B(BC), Self-tapping screw  |         |                          |   |
| A56     | 87644012  | W4 × 12F(BC), Washer             |         |                          |   |
| A57     | 28175190  | Insulator plate                  |         |                          |   |
| A61     | 27175254  | Leg                              |         |                          |   |
| A62     | 834430088 | 3TTS+8B(BC), Self-tapping screw  |         |                          |   |
| A64     | 28148256  | Tray panel                       |         |                          |   |
| A65     | 838430068 | 3TTB+6B(BC), Self-tapping screw  |         |                          |   |
| A66     | 833430080 | 3TTP+8P(BC), Self-tapping screw  |         |                          |   |
| A67     | 28191604A | Clear plate                      |         |                          |   |
| A68     | 28335034A | Lever, lock                      |         |                          |   |
| A81     | 28324397  | Knob, power                      |         |                          |   |
| A82     | 28324492  | Knob, level                      |         |                          |   |
| A93     | 29360807  | Label DANGER                     |         |                          |   |
| A94     | 29361218  | Label LASER <P/W/Q>              |         |                          |   |
| A95     | 29360811A | Label <P>                        |         |                          |   |
| A96     | 29361298  | Label SEM <P>                    |         |                          |   |
| A97     | 29361342  | Label SEM/FIN <P>                |         |                          |   |
| A98     | 29360687  | Label CLASS1 <P/W/Q>             |         |                          |   |
| L901    | 230910    | ESD-R-25DB, Core                 |         |                          |   |

NOTE: <D>: Only 120V model  
 <P>: Only 230V model  
 <W>: Only Worldwide model  
 <Q>: Only 240V model

NOTE: THE COMPONENTS IDENTIFIED BY MARK ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

# MECHANISM EXPLODED VIEW



## PARTS LIST

| REF.NO. | PART NO.    | DESCRIPTION                          | REF.NO. | PART NO.   | DESCRIPTION                      |
|---------|-------------|--------------------------------------|---------|------------|----------------------------------|
| 1       | 27100219A   | Chassis ass'y,pickup                 | 89      | 2009990199 | NSAS-5P0281,Socket               |
| 2       | 24110007A   | SPU-3011,Optical pickup              | 90      | 27190775   | Holder                           |
| 3       | 25134076    | NCETC-4076,Flake pc board            | 91      | 25065422   | NMS-1220,Microswitch             |
| 4       | 24506955    | Shaft                                | 92      | 28170024   | Bushing                          |
| 5       | 27270322    | Spacer                               | 93      | 27270342   | Spacer,guide                     |
| 6       | 27270323    | Spacer                               | S1      | 82112010   | 2P+10F,Pan head screw            |
| 7       | 24506952    | Bracket,shaft                        | S2      | 838426088  | 2.6TTB+8B(BC),Self-tapping screw |
| 11      | 24502261    | SLA2002,Motor,slide                  | S3      | 838120080  | 2TTB+8P,Self-tapping screw       |
| 12      | 24506950    | Block,terminal                       | S4      | 833426050  | 2.6TTP+5P(BC),Self-tapping screw |
| 13      | 24506953    | Bracket LM                           | S5      | 834430068  | 3TTS+6B(BC),Self-tapping screw   |
| 14      | 24506951    | Base LM                              | S6      | 863120     | N-2F,Nut                         |
| 15      | 24506954    | Holder LM                            | S7      | 831126060  | 2.6TTW+6P(BC),Self-tapping screw |
| 18      | 28141068    | Cushion                              | S8      | 833326148  | 2.6TTP+14B,Self-tapping screw    |
| 21      | 27301335D   | Chassis L                            | S9      | 834430088  | 3TTS+8B(BC),Self-tapping screw   |
| 29      | 27270212    | Spacer                               | S10     | 82143004   | 3P+4FN(BC),Pan head screw        |
| 30      | 27180467    | Plate spring                         | S11     | 838120080  | 2TTB+8P,Self-tapping screw       |
| 31      | 27260297A   | Shaft,guide                          | S12     | 8930251S   | ES-2.5S, Ring E                  |
| 32      | 27141408    | Bracket,shaft                        | S13     | 801470     | Special screw                    |
| 33      | 27301342    | Shaft,base                           | S14     | 838426088  | 2.6TTB+8B(BC),Self-tapping screw |
| 34      | 27270324    | Spacer                               |         |            |                                  |
| 35      | 27270325A   | Spacer                               |         |            |                                  |
| 36      | 27141438    | Bracket,base                         |         |            |                                  |
| 37      | 27141409    | Bracket,switch                       |         |            |                                  |
| 38      | 27180460    | Spring                               |         |            |                                  |
| 39      | 27141440A   | Bracket H                            |         |            |                                  |
| 40      | 27301343    | Arm                                  |         |            |                                  |
| 41      | 28141061A   | Cushion CH ←                         |         |            |                                  |
| 42      | 27301352    | Cap CH                               |         |            |                                  |
| 43      | 27301344    | Yoke CH ←                            |         |            |                                  |
| 44      | 28181019A   | Magnet CH ←                          |         |            |                                  |
| 46      | 27260308    | Shaft RO                             |         |            |                                  |
| 47      | 27301465A   | Roller                               |         |            |                                  |
| 48      | 27190861A   | Holder RO                            |         |            |                                  |
| 51      | 27301345A   | Chassis,sub                          |         |            |                                  |
| 52      | 27301466A   | Cushion rubber                       |         |            |                                  |
| 54      | 27301347A   | Spacer,floatng                       |         |            |                                  |
| 55      | 27180461    | Spring,silver                        |         |            |                                  |
| 56      | 27180462    | Spring,green                         |         |            |                                  |
| 57      | 27180463    | Spring,yellow                        |         |            |                                  |
| 58      | 27270330    | Spacer                               |         |            |                                  |
| 61      | 27301349B   | Cam plate                            |         |            |                                  |
| 62      | 27301331-1  | Disc tray                            |         |            |                                  |
| 63      | 27301333B   | Guide,bearing                        |         |            |                                  |
| 64      | 28141081    | Cushion,tray                         |         |            |                                  |
| 66      | 27301391    | Rope                                 |         |            |                                  |
| 67      | 27180464    | Spring,wire                          |         |            |                                  |
| 71      | 27301336    | Pulley,gear                          |         |            |                                  |
| 72      | 27301337    | Flat wheel                           |         |            |                                  |
| 73      | 27301338    | Middle pulley                        |         |            |                                  |
| 74      | 27301339    | Pulley                               |         |            |                                  |
| 75      | 27301389    | Drive pulley                         |         |            |                                  |
| 76      | 27301341    | Flat pulley                          |         |            |                                  |
| 77      | 27301350    | Rubber belt S                        |         |            |                                  |
| 78      | 27301351    | Rubber belt L                        |         |            |                                  |
| 81      | 1H048902    | Motor ass'y                          |         |            |                                  |
| 82      | 27301468    | Bush,motor                           |         |            |                                  |
| 83      | 1H169537-2  | NAETC-3937-2,Terminal pc board ass'y |         |            |                                  |
| 86      | 2009990098A | NSAS-6P0137,Socket                   |         |            |                                  |
| 87      | 2009990099B | NSAS-18P0138,Socket                  |         |            |                                  |
| 88      | 2002391445  | NSAS-14P0260,Socket                  |         |            |                                  |

## TERMINAL PC BOARD-PARTS LIST

| CIRCUIT NO. | PART NO. | DESCRIPTION     |
|-------------|----------|-----------------|
| P001        | 25050428 | NSCT-18P,Socket |
| P103A       | 25055139 | NPLG-9P123,Plug |
| P108A       | 25055151 | NPLG-7P135,Plug |

## LUBRICATION

| POINT | PART NO. | DESCRIPTION |
|-------|----------|-------------|
| A     | 260447   | G902S       |
| B     | 260451   | #331        |
| C     |          | G947P       |

## CAUTION ON REPLACEMENT OF PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc. that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair, carefully take the following precautions. (The following precautions are included in the service parts).

### PRECAUTIONS

#### 1. Ground for the work-desk.

Place a conductive sheet such as a sheet of copper (with impedance lower than  $10^6 \Omega$ ) on the work-desk and place the set on the conductive sheet so that the chassis.

#### 2. Grounding for the test equipment and tools.

Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

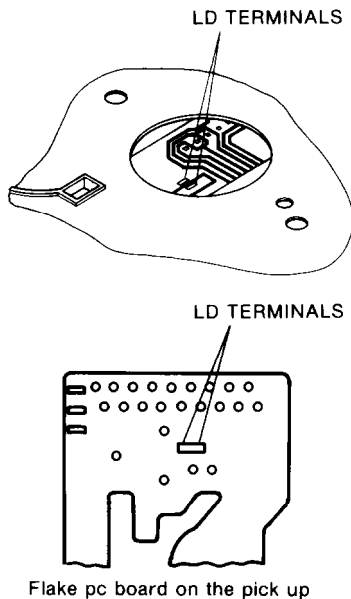
#### 3. Grounding for the human body.

Be sure to put on a wrist-strap for grounding whose other end is grounded.

Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

#### 4. Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

#### 5. Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.



#### (Care should be taken with the optical pickup.)

The optical pickup is sensitive to static electricity, surge currents, and other high electrical noise, and because there is the possibility of damage to performance, in the handling of the pickup, the utmost care must be taken, particularly with regard to static electricity.

#### Mechanism ass'y removal

When remove the mechanism ass'y, first short the LD terminals on the pc board and remove the mechanism ass'y.

#### Optical pickup removal

1. When replacing the optical pickup, first short the LD terminals and remove the connector. Also, when attaching the new optical pickup, after attaching the connector, unsolder the LD terminals.
2. Do not touch the optical pickup object lens with the hands.

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This unit employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICKUP BLOCK.

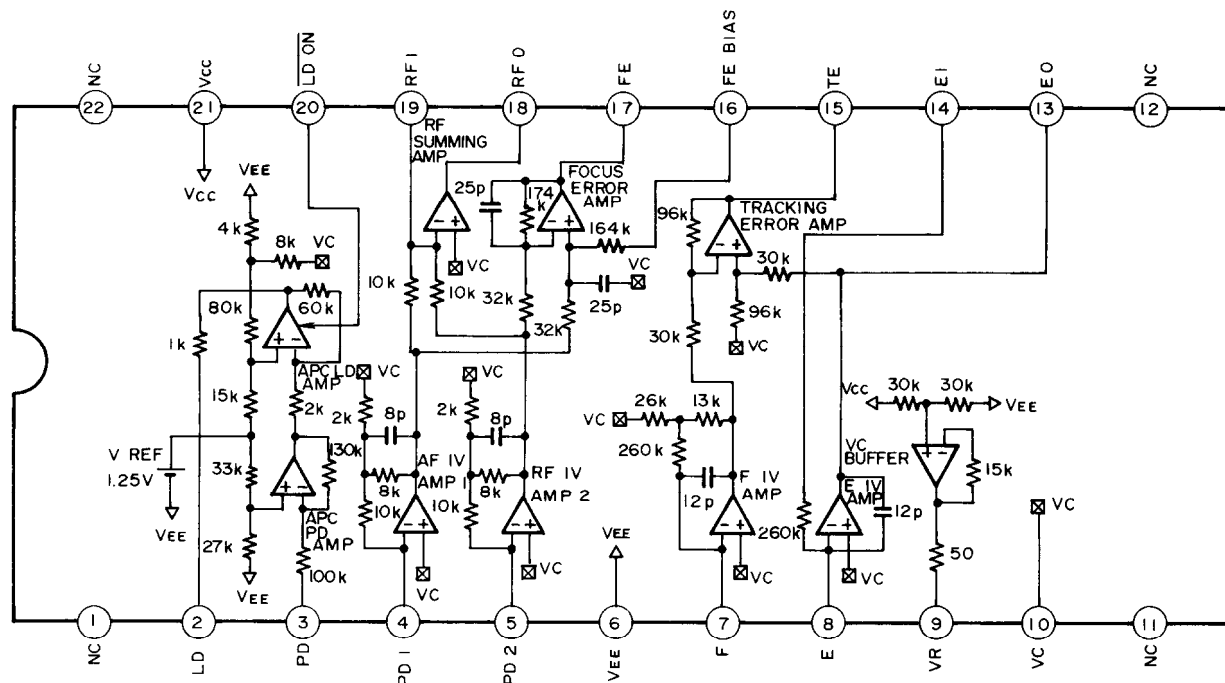
#### Laser Diode Properties

- Material: GaAs/GaAlAs
- Wavelength: 780nm
- Emission Duration: Continuous
- Laser output: Max. 0.5mW\*

\*This output is the value measured at a distance about 1.8mm from the objective lens surface on the optical pickup block.

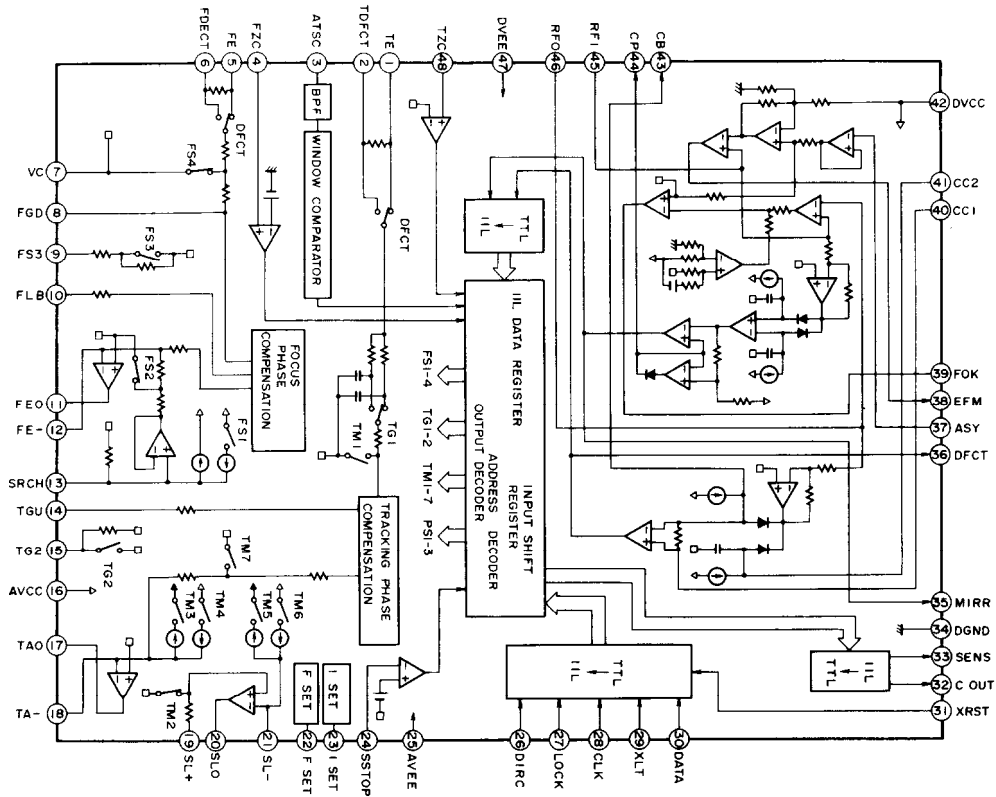
# IC BLOCK DIAGRAM AND DESCRIPTIONS

## CXA1571S (RF Amplifier)



| Pin No. | Symbol  | I/O | Description  |
|---------|---------|-----|--|
| 2       | LD      | O   | Output terminal of APC amplifier.  |
| 3       | PD      | I   | Input terminal of APC amplifier.   |
| 4       | PD1     | I   | Inversion input terminal for RF I-V amplifier. Connect to photo diode A+C.             |
| 5       | PD2     | I   | Inversion input terminal for RF I-V amplifier. Connect to photo diode B+D.             |
| 7       | F-IN    | I   | Inversion input terminal for F I-V amplifier. Connect to photo diode F.                |
| 8       | E-IN    | I   | Inversion input terminal for E I-V amplifier. Connect to photo diode E.                |
| 9       | VR      | O   | DC voltage output of $(V_{CC} + V_{EE})/2$ .   |
| 10      | VC      | I   | Middle point voltage input terminal.   |
| 13      | EO      | O   | Monitor output terminal for I-V amplifier E.   |
| 14      | EI      | -   | Gain adjustment terminal for I-V amplifier E.  |
| 15      | TE      | O   | Tracking error amplifier output terminal. The signal E-F is output from this terminal. |
| 16      | FE-BIAS | I   | Bias adjustment terminal for non-inversion side of focus error amplifier.              |
| 17      | FE      | O   | Focus error amplifier output terminal.   |
| 18      | RFO     | O   | RF amplifier output terminal.  |
| 19      | RFI     | I   | Inversion input terminal of RF amplifier.  |
| 20      | LD-ON   | I   | Change-over terminal for APC amplifier.  |

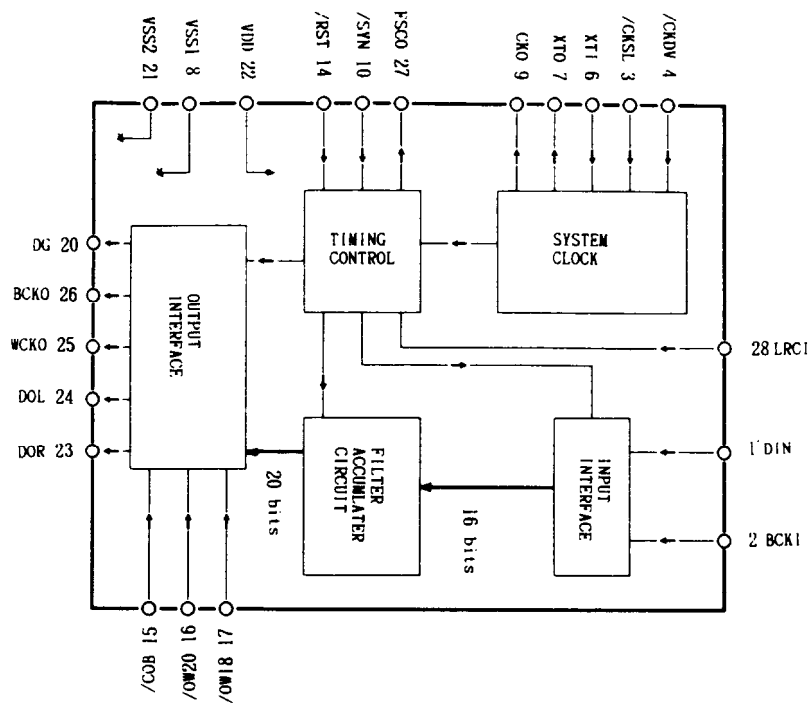
CXA1372S (RF Signal Processor Servo Amplifier)



| PIN. NO. | SYMBOL | I/O | DESCRIPTION  | PIN. NO. | SYMBOL | I/O | DESCRIPTION   |
|----------|--------|-----|--|----------|--------|-----|---|
| 1        | TE     | I   | Tracking error input terminal.   | 22       | FSET   | I   | Peak setting input of phase correction of focus tracking.   |
| 2        | TDFCT  | I   | Capacitor connection terminal for time constant when defect.   | 23       | ISET   | I   | This terminal is flowed the current so that the focus search, tracking jump, and sled kick height is decided. |
| 3        | ATSC   | I   | Window comparator input terminal for ATSC detection.   | 24       | SSTOP  | I   | Inner switch selection input terminal.  |
| 4        | FZC    | I   | Focus zero-cross comparator input terminal.  | 26       | DIRC   | I   | This terminal is used when a track jump.  |
| 5        | FE     | I   | Focus error input terminal.  | 27       | LOCK   | I   | The sled runaway prevention circuit operates at the low level.  |
| 6        | DFDCT  | I   | Capacitor connection terminal for time constant when detect.   | 28       | CLK    | I   | Serial data transfer clock input from microprocessor.   |
| 7        | VC     | I   | Mid-point voltage input terminal.  | 29       | XLT    | I   | Latch input from microprocessor.  |
| 8        | FGD    | I   | Connect the capacitor between pin 9 and this pin when the high frequency gain of focus servo is dropped. | 30       | DATA   | I   | Serial data input from microprocessor.  |
| 9        | FS3    | I   | Focus servo high frequency gain changeover input terminal.   | 31       | XRST   | I   | Reset input terminal. Active low.   |
| 10       | FLB    | I   | Input terminal for the low frequency boost of focus servo.   | 32       | C. OUT | O   | Signal output to count the track numbers.   |
| 11       | FEO    | O   | Focus drive output terminal.   | 33       | SENS   | O   | This terminal outputs FZC. and SSTOP to according command from microprocessor.                                |
| 12       | FE-    | I   | Inversion input terminal of focus amplifier.   | 35       | MIRR   | O   | Mirror comparator output terminal.  |
| 13       | SRCH   | I   | Time constant terminal to make the focus search waveform.  | 36       | DFCT   | O   | Defect comparator output terminal.  |
| 14       | TGU    | I   | Tracking high frequency gain changeover input terminal.  | 37       | ASY    | I   | Auto asymmetry control input terminal.  |
| 15       | TG2    | I   | Tracking high frequency changeover input terminal.   | 38       | EFM    | O   | EFM comparator output terminal.   |
| 17       | TAO    | O   | Tracking drive output terminal.  | 39       | FOK    | O   | Focus OK comparator output terminal.  |
| 18       | TA-    | I   | Inversion input terminal of tracking amplifier.  | 40       | CC1    | O   | Defect bottom hold output terminal.   |
| 19       | SL+    | I   | No-inversion input terminal of sled amplifier.   | 41       | CC2    | I   | Defect bottom hold input terminal from CC1.   |
| 20       | SLO    | O   | Sled (slide) drive output terminal.  | 43       | CB     | I   | Defect bottom hold capacitor connection terminal.   |
| 21       | SL+    | I   | No-inversion input terminal of sled amplifier.   | 44       | CP     | I   | Mirror hold capacitor connection terminal.  |
| 21       | SL-    | I   | Inversion input terminal of sled amplifier.  | 45       | RFI    | I   | RF summing amplifier input terminal.  |
| 21       | SL-    | I   | Inversion input terminal of sled amplifier.  | 46       | RFO    | O   | RF summing amplifier output terminal.   |
| 21       | SL-    | I   | Inversion input terminal of sled amplifier.  | 48       | TZC    | I   | Tracking zero-cross comparator input terminal.  |



## SM5813AP (18 bits Oversampling Digital Filter)

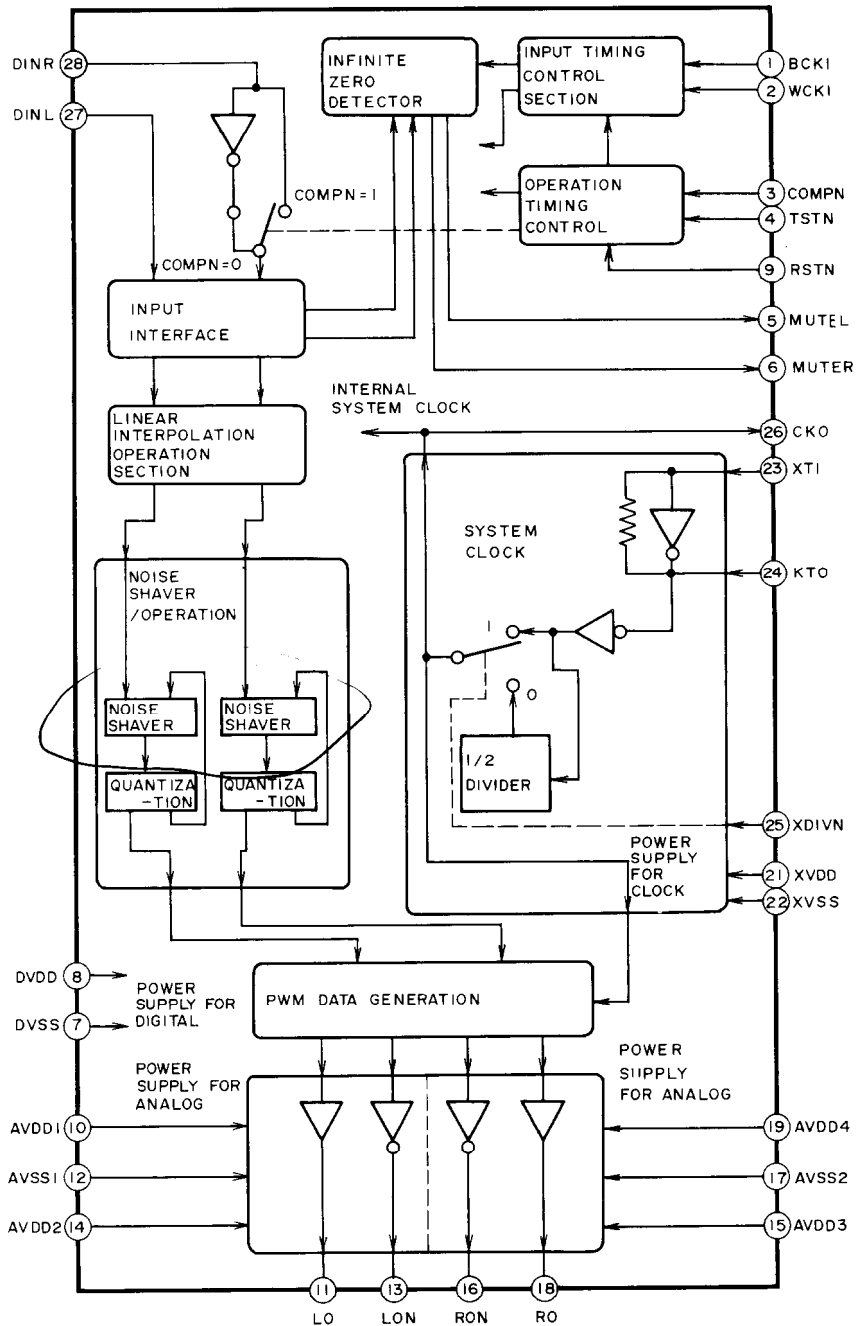


| Pin No. | Terminal | I/O | Function  |
|---------|----------|-----|---|
| 1       | DIN      | I   | Input data  |
| 2       | BCKI     | I   | Bit clock of input data   |
| 3       | /CKSL    | I   | Input frequency selection terminals of terminal XTI (Pin 6)     |
| 4       | /CKVD    | I   |   |
| 6       | XTI      | I   | Input section of oscillator section                             |
| 7       | XTO      | O   | Output section of oscillator section                            |
| 8       | Vss1     |     | Ground terminal   |
| 9       | CKO      | O   | Output clock of oscillator section The frequency is same as XTI |
| 10      | /SYN     | I   | Mode selection terminal H:Jitter free L:Forced sync.            |
| 14      | /RST     | I   | System reset H:Normal L:Reset                                   |
| 15      | /COB     | I   | H:Complement of 2 L:COB   |
| 16      | /OW20    | I   | Output bit numbers selector                                     |
| 17      | /OW18    | I   |   |
| 20      | DG       | O   | Degilith control clock  |
| 21      | Vss2     |     | Ground terminal   |
| 22      | VDD      |     | Power supply terminal (+5V)                                     |
| 23      | DOR      | O   | 8-times oversampling output data of right channel               |
| 24      | DOL      | O   | 8-times oversampling output data of left channel                |
| 25      | WCKO     | O   | Word clock of output data                                       |
| 26      | BCKO     | O   | Bit clock of output data  |
| 27      | FSCO     | O   | Internal accumulator timing clock of period fs.                 |
| 28      | LRCI     | I   | Sample rate clock of input data                                 |

### Output bit numbers

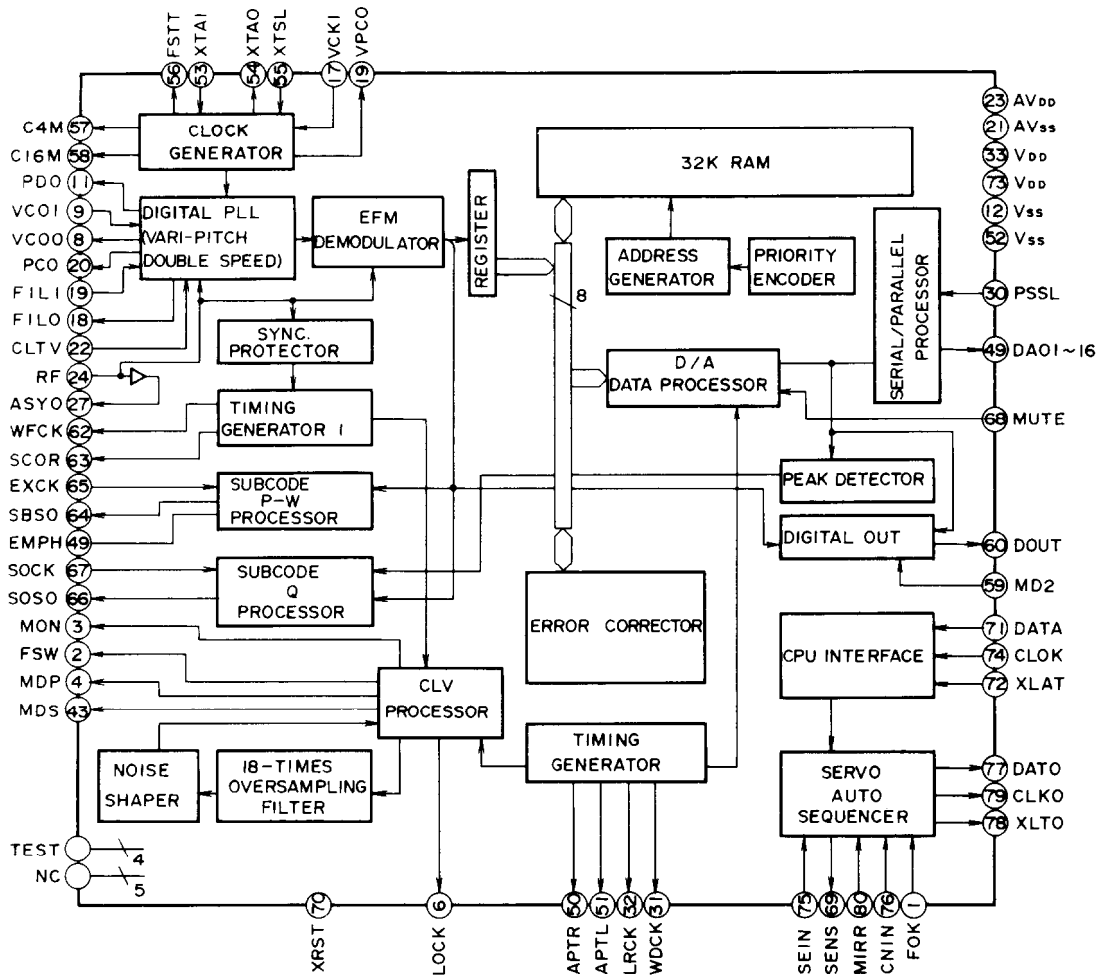
| Output bit | 16 | 18 | 20 |
|------------|----|----|----|
| /OW18      | H  | L  | H  |
| /OW20      | H  | H  | L  |

SM5861AP (D/A converter)

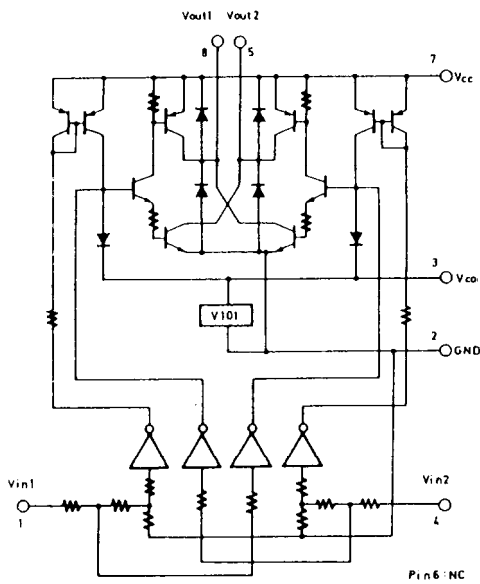


| Pin No. | Symbol | Description                         | Pin No. | Symbol | Description                         |
|---------|--------|-------------------------------------|---------|--------|-------------------------------------|
| 1       | BCKI   | Serial input data bit clock         | 15      | AVDD3  | 5V supply for analogue section      |
| 2       | WCKI   | Input data word clock               | 16      | RON    | Data output                         |
| 3       | COMPN  | Mode select of PWM output           | 17      | AVSS2  | Ground for analogue section         |
| 4       | TSTN   | Test terminal                       | 18      | RO     | Data output                         |
| 5       | MUTEL  | Muting output for left channel      | 19      | AVDD4  | Ground for analogue section         |
| 6       | MUTER  | Muting output for right channel     | 20      | NC     |                                     |
| 7       | DVSS   | Ground for digital section          | 21      | XVDD   | 5V supply for clock section         |
| 8       | DVDD   | 5V power supply for digital section | 22      | XVSS   | Ground for clock section            |
| 9       | RSTN   | Reset input                         | 23      | XTI    | Crystal oscillator input            |
| 10      | AVDD1  | 5V supply for analogue section      | 24      | XTO    | Crystal oscillator output           |
| 11      | LO     | Data output                         | 25      | XDIVN  | System clock select                 |
| 12      | AVSS1  | Ground for analogue section         | 26      | CKO    | Clock output                        |
| 13      | LON    | Data output                         | 27      | DINL   | Serial data input for left channel  |
| 14      | AVDD2  | 5V supply for analogue section      | 28      | DINR   | Serial data input for right channel |

## CXD2500AQ (Digital Signal Processor)



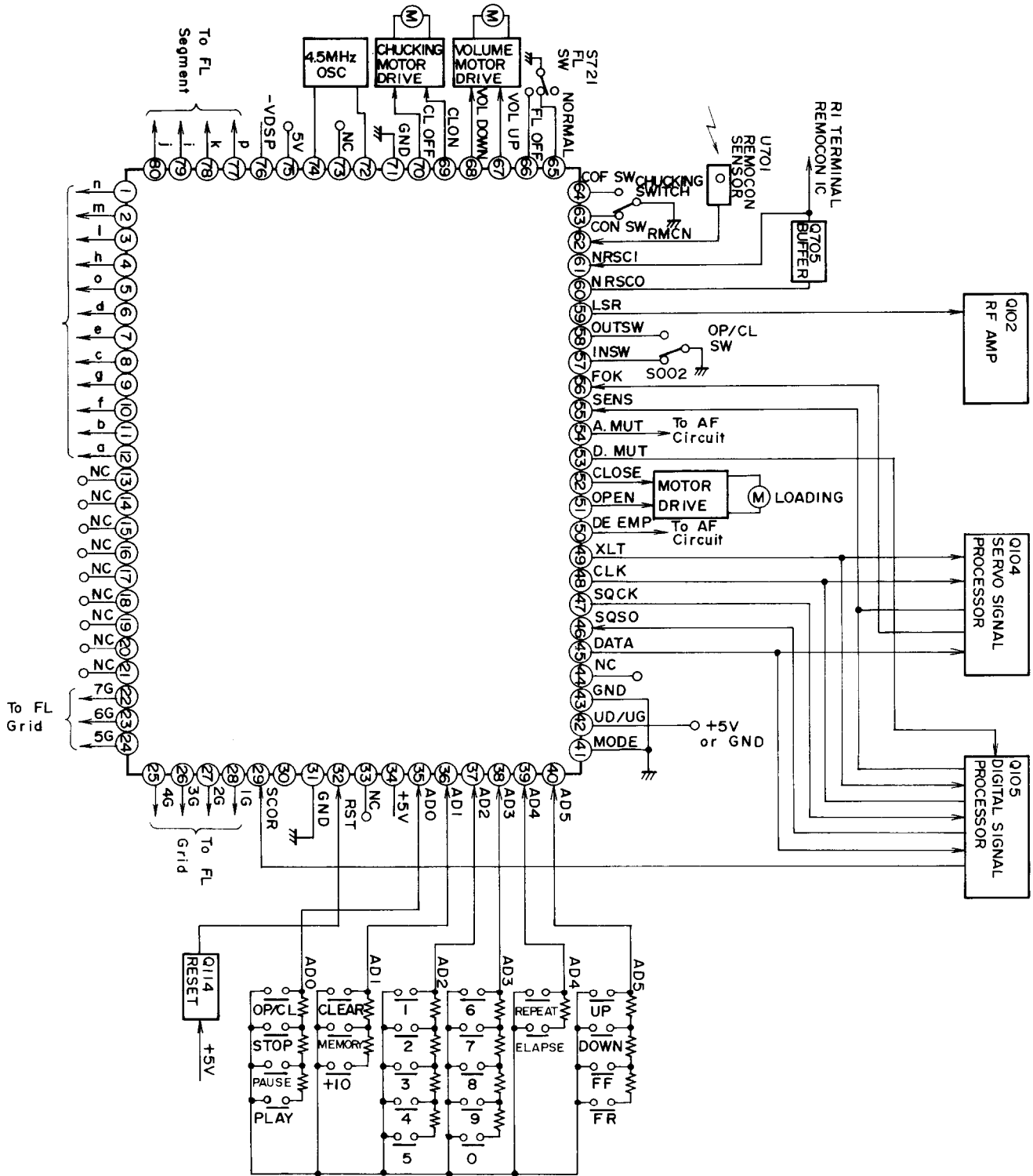
## LB1630 (Volume Motor Drive)



| NO.   | SYMBOL | I/O | DESCRIPTION  | NO. | SYMBOL | I/O | DESCRIPTION   |
|-------|--------|-----|--|-----|--------|-----|---|
| 1     | FOK    | I   | Focus OK input   | 42  | DA08   | O   | DA08 GFS output   |
| 2     | FSW    | O   | Output filter changeover output of spindle motor                                   | 43  | DA07   | O   | DA07 RFCK output  |
| 3     | MON    | O   | Spindle motor control output   | 44  | DA06   | O   | DA06 C2P0 output  |
| 4     | MDP    | O   | Spindle motor servo control  | 45  | DA05   | O   | DA05 XRAOF output   |
| 5     | MDS    | O   | Spindle motor servo control  | 46  | DA04   | O   | DA04 MNT3 output  |
| 6     | LOCK   | O   | H when GFS is high   | 47  | DA03   | O   | DA03 MNT2 output  |
| 7     | NC     |     |  | 48  | DA02   | O   | DA02 MNT1 output  |
| 8     | VCOO   | O   | Oscillation circuit output for analog FEM PLL                                      | 49  | DA01   | O   | DA01 MNT0 output  |
| 9     | VCOI   | I   | Oscillation circuit input for analog EFM PLL (8.6436MHz)                           | 50  | APTR   | O   | Control output for aperture correction. H when Reh.                     |
| 10    | TEST   | I   | Test terminal  | 51  | APTL   | O   | Control output for aperture correction. H when Lch.                     |
| 11    | PDO    | O   | Charge pump output for analog EFM PLL  | 52  | Vss    |     | Ground  |
| 12    | Vss    |     | Ground terminal  | 53  | XTA1   | I   | Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input     |
| 13-15 | NC     |     |  | 54  | XTA0   | O   | Crystal oscillation circuit output of 16.9344MHz                        |
| 16    | VPCO   | O   | PLL charge pump output for variable pitch  | 55  | XTSL   | I   | Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz. |
| 17    | VCKI   | I   | Clock input for variable pitch from VCO (16.934MHz)                                | 56  | FSTT   | O   | 2/3 divided output of pins 53 & 54                                      |
| 18    | FILO   | O   | Filter output for master PLL   | 57  | C4M    | O   | 4.2336MHz output  |
| 19    | FILI   | I   | Filter input for master PLL  | 58  | C16M   | O   | 16.9344MHz output   |
| 20    | PCO    | O   | Charge pump output for master PLL  | 59  | MD2    | I   | Digital output control input. On at H & Off at L.                       |
| 21    | AVss   |     | Analog ground  | 60  | DOU    | O   | Digital output  |
| 22    | CLTV   | I   | VCO control voltage input for master   | 61  | EMPH   | O   | Emphasis control output. Active H.                                      |
| 23    | AVDD   |     | Analog section power supply(+5V)   | 62  | WFCK   | O   | Write frame clock output  |
| 24    | RF     | I   | EFM signal input   | 63  | SCOR   | O   | Sub-code detection output. H when is detected S0 or S1.                 |
| 25    | TEST2  | I   | Connect to the ground.   | 64  | SBSO   | O   | Serial output of sub code (P~W)   |
| 26    | TEST3  | I   | Connect to the ground.   | 65  | EXCK   | I   | Clock input for read out SBSO   |
| 27    | ASYO   | O   | EFM full swing output  | 66  | SQSO   | O   | Sub Q 80 bits. PCM peak. and level data 16 bits output                  |
| 28    | TEST4  | I   | Connect to the ground.   | 67  | SQCK   | I   | Clock input for read out SQSO   |
| 29    | NC     |     |  | 68  | MUTE   | O   | Muting control output. Active H.  |
| 30    | PSSL   | I   | Audio data output mode changeover input. Serial data at L. and paraller data at H. | 69  | SENS   | -   | Sens output. Output to microprocessor                                   |
| 31    | WDCK   | O   | D/A interface for 48 bits slot. Word clock f=2Fs.                                  | 70  | XRST   | I   | System reset. Rest at low level.  |
| 32    | LRCK   | O   | D/A interface for 48 bits slot. LR clock f=Fs.                                     | 70  | DATA   | I   | Serial data input from microprocessor                                   |
| 33    | VDD    |     | Power supply terminal(+5V)   | 72  | XLTA   | I   | Latch input from microprocessor. Latch the serial data at trailing.     |
| 34-49 |        |     | Data output terminals  | 73  | VDD    |     | Power supply  |
|       |        |     | PSSL=1 PSSL=0  | 74  | CLOK   | I   | Serial data transfer clock input from microprocessor                    |
| 34    | DA16   | O   | DA16 Serial data of 48 bits slot   | 75  | SEIN   | I   | Sens input from SSP   |
| 35    | DA15   | O   | DA15 Bit clock of 48 bits slot   | 76  | CNCI   | I   | Track jump numbers count signal input                                   |
| 36    | DA14   | O   | DA14 Serial data of 64 bits slot   | 77  | DATO   | O   | Serial data output to SSP   |
| 37    | DA13   | O   | DA13 Bit clock of 68 bits slot   | 78  | XLTO   | O   | Serial data latch output to SSP. Latch at trailing.                     |
| 38    | DA12   | O   | DA12 LR clock of 68 bits slot  | 79  | CLKO   | O   | Serial data transfer clock output to SSP                                |
| 39    | DA11   | O   | DA11 GTOP output   | 80  | MIRR   | I   | Mirror signal input   |
| 40    | DA10   | O   | DA10 XUGF output   |     |        |     |   |
| 41    | DA09   | O   | DA09 XPLCK output  |     |        |     |   |

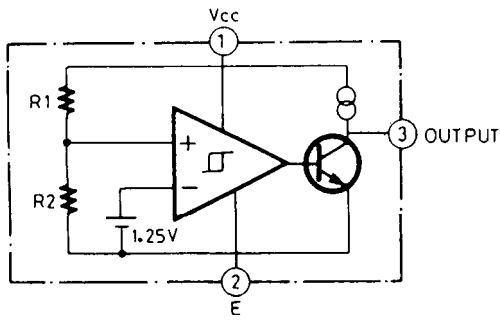
Note:SSP:Q104 CXA1372S

CXP50116-166 (Microprocessor)

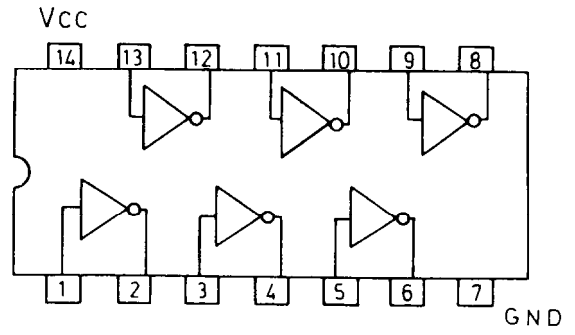


| Pin No. | Symbol                               | I/O | Descriptions  |
|---------|--------------------------------------|-----|---|
| 1~12    | n, m, l, h, o, d<br>e, c, g, t, b, a | O   | Fluorescent indicator tube segment output terminals. Active high.                               |
| 22~28   | 7G~1G                                | O   | Fluorescent indicator tube grid output terminals. Active high.                                  |
| 29      | SCOR                                 | I   | Sub code sink input terminal. Leading pulse (75Hz) is input during play.                        |
| 32      | XRST                                 | I/O | Reset input terminal. Reset at low level when the power switch turns on.                        |
| 34      | VDD                                  |     | +5V power supply.   |
| 35~40   | AD0~AD5                              | I   | A/D converter input terminals for key input.  |
| 42      | UD/UG                                | I   | Indicator method changeover input when the power switch turns on.                               |
| 44      | SC                                   | O   | Servo system serial command clock (CLK) and sub code Q read clock (SQCK) output terminal.       |
| 45      | DATA                                 | O   | Data output terminal of serial command of servo system.   |
| 46      | SQSO                                 | I   | Input terminal of sub code Q.   |
| 47      | SQCK                                 | O   | Read clock output control terminal of sub code Q.   |
| 48      | CLK                                  | O   | Clock output control terminal of serial command of servo system.                                |
| 49      | XLT                                  | O   | Latch command output terminal of serial command of servo system.                                |
| 50      | DEEMP                                | O   | Emphasis switch control output terminal. Active high.   |
| 51      | OPEN                                 | O   | Tray open operation output terminal. Open at low level.   |
| 52      | CLOSE                                | O   | Tray close operation output terminal. Close at low level.                                       |
| 53      | D. MUT                               | O   | Digital muting control output terminal.   |
| 54      | A. MUT                               | O   | Audio muting control output terminal. Muting turns off at low level.                            |
| 55      | SENSE                                | I   | This terminal is input the conditions of servo system according serial command of servo system. |
| 56      | FOK                                  | I   | Focus OK input terminal. This terminal is the high level when focus servo operates.             |
| 57      | IN SW                                | I   | Close switch input terminal. L when the close switch turns on.                                  |
| 58      | OUT SW                               | I   | Open switch input terminal. L when the open switch turns on.                                    |
| 59      | LSR                                  | O   | Laser diode ON/OFF control output terminal. ON at low level.                                    |
| 60      | NRSC OUT                             | O   | System code output terminal.  |
| 61      | NRSC IN                              | I   | System code input terminal.   |
| 62      | RMCN                                 | I   | Input terminal from remote control sensor.  |
| 63,64   | CON/ COF SW                          | I   | Chucking switch detection input terminal  |
| 65      | DIMMER SW NORMAL                     | I   | The FL tube lights on normally when this terminal is the low level.                             |
| 66      | DIMMER SW OFF                        | I   | The FL tube lights off when this terminal is the low level.                                     |
| 67      | VOL DOWN                             | O   | Volume control output terminal. Active "H".   |
| 68      | VOL UP                               | O   | Volume control output terminal. Active "H".   |
| 69, 70  | CL ON/OFF                            | O   | Chucking motor control output terminal  |
| 71      | V <sub>ss</sub>                      |     | Connect to GND.   |
| 72, 74  | OSC                                  | I   | X'tal connection terminal   |
| 76      | -32V                                 |     | Power supply terminal for fluorescent indicator tube.   |
| 77~80   | p, k, i, j                           | O   | Fluorescent indicator tube segment output terminals. Active high.                               |

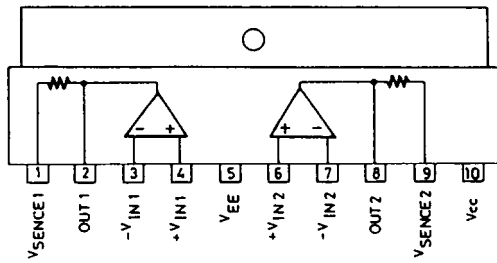
**M51943ASL (System reset)**



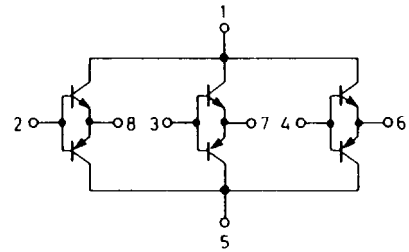
**74HCU04P (Hex inverters)**



**LA6510 (Power operation amp.)**



**STA341M-L (Transistor array)**



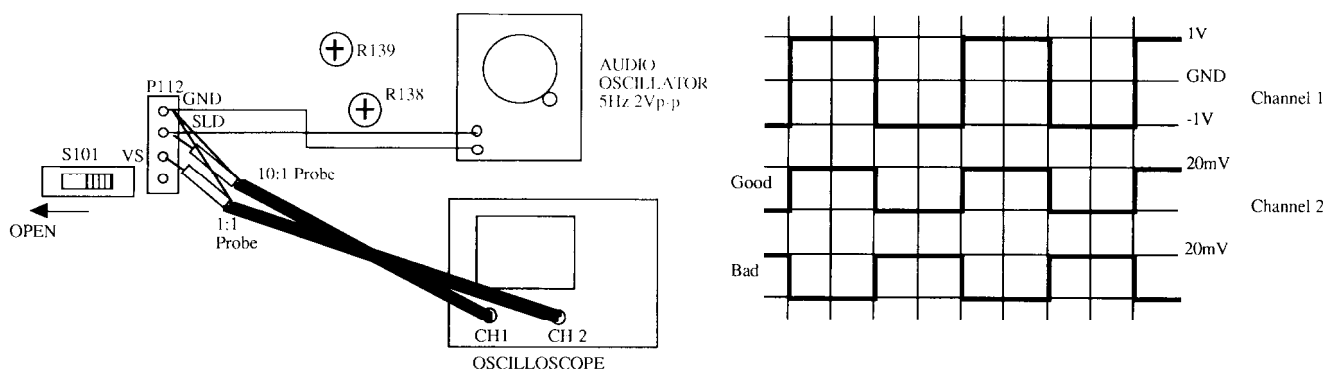
# ADJUSTMENT PROCEDURES

## Instruments required

Dual trace oscilloscope, Frequency counter, AF oscillator, Test disc (SONY YEDS-18), AC voltmeter, and Socket P4(Part no. 25050138)

### 1. Slide Balance Adjustment

1. Connect the audio oscillator to P112 SLD and the oscilloscope to P112 SLD and VS as shown below.
  2. Set the output of oscillator to the square wave, 5Hz, 2Vp-p.
  3. Turn the switch S101 to OPEN.
  4. Turn the power switch to ON.
  5. Confirm that the optical pickup does not move. (If it moves, control it by hand.)
  6. Adjust the semi-fixed resistor R139 so that the waveforms of channels 1 and 2 become the same phase.
- After adjustment, remove the audio oscillator and oscilloscope.



### 2. Slide Offset Adjustment

1. Connect the oscilloscope to P112 SLD.
2. Turn S101 to SHORT.
3. Adjust the semi-fixed resistor R138 so that the waveform on the oscilloscope becomes 0V.

### 3. Focus Offset Adjustment

- Load the test disc YEDS-18 on the tray and play the track 2.
- Connect the oscilloscope to the terminal P110.
- Adjust R111 so that the waveform on the oscilloscope becomes maximum.
- When the output is broad, set R111 to the mechanical center.

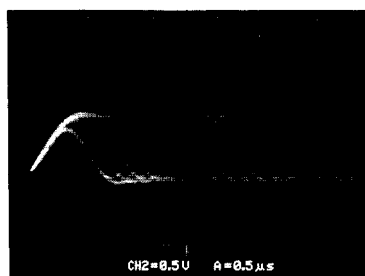
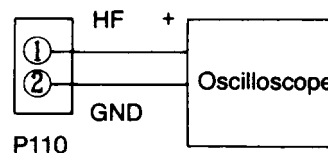


Photo 1





#### 4. Tracking offset adjustment

Load the test disc YEDS-18 on the tray and play the track 2.

Turn R118 to minimum position. (Counter clockwise)

Connect the oscilloscope across pin 3 (TR) of P111 and P110. (Ground)

Adjust R115 until the center of tracking error signal on the oscilloscope becomes GND level.

Turn R118 to the mechanical center.

After adjustment, disconnect the oscilloscope.

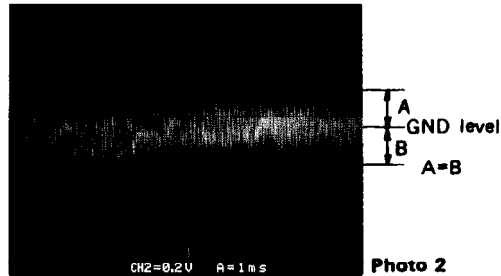
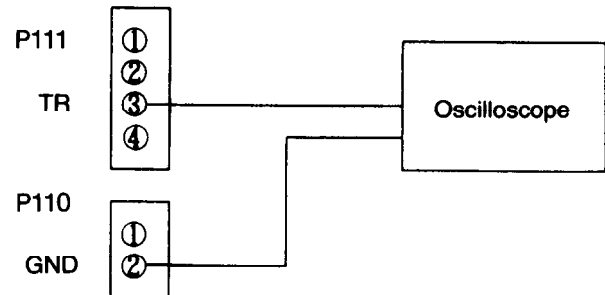


Photo 2



#### 5. Focus gain adjustment

Set the output of AF oscillator to 800Hz, 1~1.5Vp-p.

Play the track 2 of test disc.

Connect the oscilloscope and the AF oscillator as shown below.

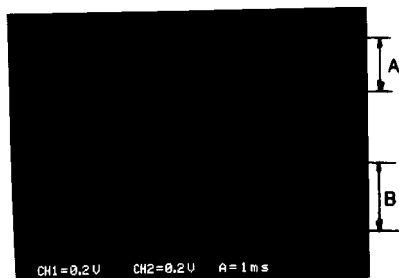
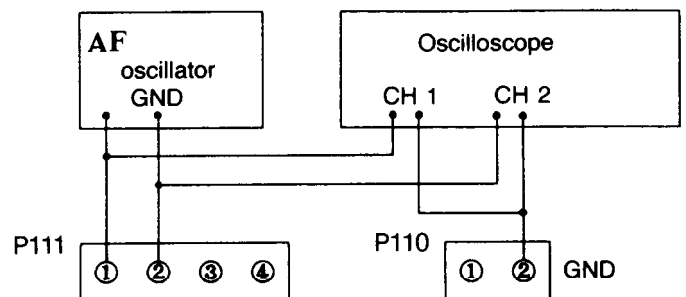


Photo 3



Adjust R116 until 800Hz components of channels 1 and 2 on oscilloscope become same level.

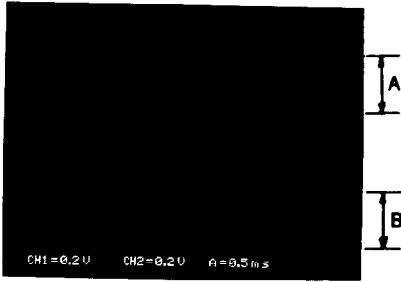
After adjustment, disconnect the AF oscillator and the oscilloscope.

**6. Tracking gain adjustment**

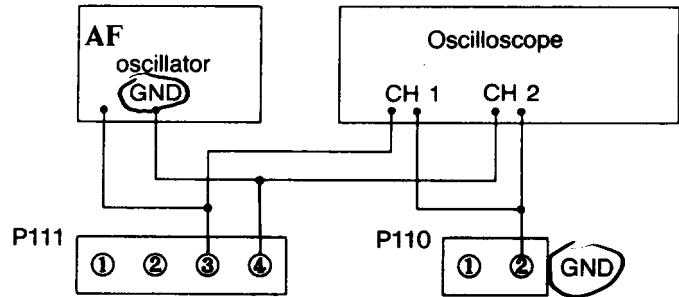
Set the output of AF oscillator to 1.2kHz, 1~1.5Vp-p.

Play the track 2 of test disc.

Connect the oscilloscope and the AF oscillator as shown below.



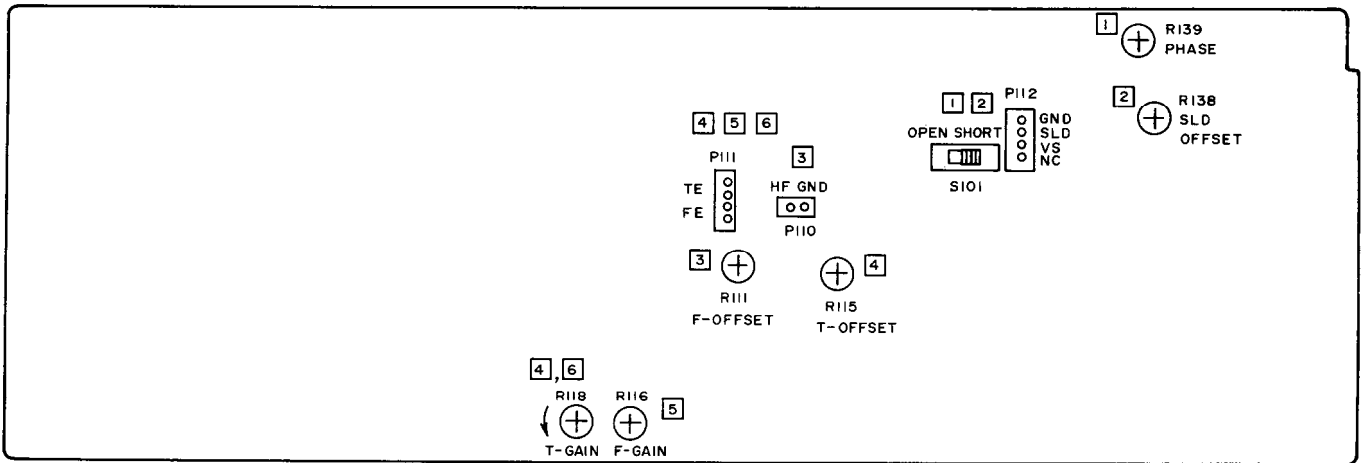
**Photo 4**



Adjust R118 until 1.2kHz components of channels 1 and 2 on oscilloscope become same level.

After adjustment, disconnect the AF oscillator and the oscilloscope.

After adjustment, confirm that the center of tracking error signal becomes GND level.



# PC BOARD PARTS LIST

## MODEL DX-706

### MAIN CIRCUIT PC BOARD (NAAR-4272-1)

| CIRCUIT NO. | PART NO.     | DESCRIPTION                        |
|-------------|--------------|------------------------------------|
|             |              | ICs                                |
| Q116        | 24120031     | TOTX178                            |
| Q302        | 222755       | 74HCU04P                           |
| Q401,Q402   | 22240520     | SM5861AP                           |
| Q403-Q408   | 222902       | NJM5532D-D                         |
| Q417        | 222654       | NJM4556D                           |
| Q501        | 22240288     | SM5813AP                           |
| Q953        | 222811       | NJM4558D-D                         |
| Q954,Q955   | 222780053    | 78L05                              |
| Q956        | 222780055MIT | M5F78M05                           |
|             |              | Transistors                        |
| Q409,Q410   | 2213090 or   | DTA114YS or                        |
| Q415,Q416   | 2213590      | RN2207                             |
| Q411,Q412   | 2212524 or   | 2SK363-GR or                       |
|             | 2212525      | 2SK363-BL                          |
| Q413,Q414   | 2211705 or   | 2SD655-E or                        |
|             | 2211706      | 2SD655-F                           |
| Q503        | 221281 or    | DTC114YS or                        |
| Q601,Q604   | 2213570      | RN1207                             |
| Q504        | 2211254 or   | 2SC1815-Y or                       |
|             | 2211255      | 2SC1815-GR                         |
| Q602        | 2213090 or   | DTA114YS or                        |
|             | 2213590      | RN2207                             |
| Q603        | 2211945      | 2SK246-GR                          |
| Q951        | 2201284,     | 2SD882-R,                          |
|             | 2201285 or   | 2SD882-Q or                        |
|             | 2201286      | 2SD882-P                           |
| Q952        | 2201274,     | 2SB772-R,                          |
|             | 2201275 or   | 2SB772-Q or                        |
|             | 2201276      | 2SB772-P                           |
|             |              | Diodes                             |
| D601,D607   | 223163       | 1SS133                             |
| D608,D611   | 223163       | 1SS133                             |
| D612        | 224450822    | MTZ8.2B                            |
| D613        | 223163       | 1SS133                             |
| D951-D954   | 22380045     | RL-203                             |
|             |              | Cores                              |
| L102,R303   | 230906       | BL02RN2-R62                        |
| R305,R306   | 230906       | BL02RN2-R62                        |
|             |              | Coil                               |
| L301        | 231023       | NCH-1062                           |
|             |              | X'tal                              |
| X301        | 3010159      | AT-38-169                          |
|             |              | Capacitors                         |
| C191        | 354744709    | 47 $\mu$ F,16V,Elect.              |
| C402,C403   | 393021017    | 100 $\mu$ F,6.3V,Elect.            |
| C405-C408   | 374722234    | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C409,C410   | 393021017    | 100 $\mu$ F,6.3V,Elect.            |
| C415,C416   | 391222217    | 220 $\mu$ F,6.3V,Elect.            |
| C417,C418   | 374722234    | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C423        | 374722734    | 0.027 $\mu$ F $\pm$ 5%,50V,Plastic |
| C425-C428   | 373302714    | 270pF $\pm$ 5%,125V,Plastic        |
| C429,C430   | 373301014    | 100pF $\pm$ 5%,125V,Plastic        |
| C431-C434   | 393144707    | 47 $\mu$ F,16V,Elect.              |
| C437,C438   | 374722224    | 2200pF $\pm$ 5%,50V,Plastic        |
| C439,C440   | 374722734    | 0.027 $\mu$ F $\pm$ 5%,50V,Plastic |
| C443,C444   | 374722224    | 2200pF $\pm$ 5%,50V,Plastic        |
| C449,C450   | 374722224    | 2200pF $\pm$ 5%,50V,Plastic        |
| C451,C452   | 372122024    | 2000pF $\pm$ 5%,50V,Styrole        |
| C453,C454   | 373301014    | 100pF $\pm$ 5%,125V,Plastic        |
| C455-C458   | 393144707    | 47 $\mu$ F,16V,Elect.              |
| C459,C460   | 374722734    | 0.027 $\mu$ F $\pm$ 5%,50V,Plastic |
| C461,C462   | 393154717    | 470 $\mu$ F,25V,Elect.             |
| C463,C464   | 374722734    | 0.027 $\mu$ F $\pm$ 5%,50V,Plastic |
| C465,C466   | 374722224    | 2200pF $\pm$ 5%,50V,Plastic        |

| CIRCUIT NO. | PART NO.        | DESCRIPTION                        |
|-------------|-----------------|------------------------------------|
|             |                 | Capacitors                         |
| C467,C468   | 374722234       | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C469-C472   | 373301014       | 100pF $\pm$ 5%,125V,Plastic        |
| C474        | 374722234       | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C475,C476   | 393144707       | 47 $\mu$ F,16V,Elect.              |
| C477-C480   | 373302714       | 270pF $\pm$ 5%,125V,Plastic        |
| C481,C482   | 373301014       | 100pF $\pm$ 5%,125V,Plastic        |
| C503        | 393022217       | 220 $\mu$ F,6.3V,Elect.            |
| C508,C510   | 393021017       | 100 $\mu$ F,6.3V,Elect.            |
| C603        | 393180107       | 1 $\mu$ F,50V,Elect.               |
| C605        | 374724734       | 0.047 $\mu$ F $\pm$ 5%,50V,Plastic |
| C606        | 374722234       | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C951,C952   | 374721044       | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C953        | 374722244       | 0.22 $\mu$ F $\pm$ 5%,50V,Plastic  |
| C954,C955   | 393154727       | 4700 $\mu$ F,25V,Elect.            |
| C956,C957   | 374722734       | 0.027 $\mu$ F $\pm$ 5%,50V,Plastic |
| C958        | 393122217       | 220 $\mu$ F,6.3V,Elect.            |
| C960-C962   | 393144707       | 47 $\mu$ F,16V,Elect.              |
| C963,C964   | 374721044       | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C967,C968   | 393144717       | 470 $\mu$ F,16V,Elect.             |
| C971        | 393144707       | 47 $\mu$ F,16V,Elect.              |
| C974        | 374722734       | 0.027 $\mu$ F $\pm$ 5%,50V,Plastic |
|             |                 | Resistors                          |
| R951,R952   | 442520394       | 3.9ohm,1/2W,Metal oxide film       |
|             |                 | Relay                              |
| RL601       | 25065174        | NRL-2P1A-DC12-09                   |
|             |                 | Terminals                          |
| P111        | 25045172        | HSJ1003-01-020                     |
| P401        | <u>25045351</u> | NPJ-4PDWR197 <i>C E 026</i>        |
|             |                 | Plugs                              |
| P102        | 25055148        | NPLG-4P132                         |
| P107        | 25055154        | NPLG-10P138                        |
| P402        | 25055150        | NPLG-6P134                         |
|             |                 | Sockets                            |
| JS401       | 25050267        | NSCT-3P95                          |
|             | 2009990132      | NSAS-2P0208                        |
|             |                 | Holder                             |
|             | 27190751        |                                    |

### DIGITAL CIRCUIT PC BOARD (NADG-4273-1/1A)

| CIRCUIT NO. | PART NO.     | DESCRIPTION  |
|-------------|--------------|--------------|
|             |              | ICs          |
| Q102        | 22240404     | CXA1571S     |
| Q104        | 22240366     | CXA1372S     |
| Q105        | 22240487     | CXD2500AQ    |
| Q106        | 22240168     | STA341M-L    |
| Q107        | 222090       | S2FR04       |
| Q109        | 22240033     | LA6500       |
| Q110,Q111   | 22240034     | LA6510       |
| Q114        | 22240018     | M51943ASL    |
| Q902        | 222790055MIT | M5F79M05     |
| Q903        | 222780055MIT | M5F78M05     |
|             |              | Transistors  |
| Q101,Q113   | 2211503 or   | 2SA950-O or  |
| Q904        | 2211504      | 2SA950-Y     |
| Q103        | 221281 or    | DTC114YS or  |
|             | 2213570      | RN1207       |
| Q112        | 2211163 or   | 2SC2120-O or |
|             | 2211164      | 2SC2120-Y    |
| Q115        | 2211454 or   | 2SA1015-Y or |
|             | 2211455      | 2SA1015-GR   |
|             |              | Diodes       |
| D101,D903   | 223163       | 1SS133       |
| D102,D103   | 224451102    | MTZ11B       |

| CIRCUIT NO. | PART NO.                  | DESCRIPTION                  | CIRCUIT NO. | PART NO.              | DESCRIPTION  |
|-------------|---------------------------|------------------------------|-------------|-----------------------|--|
|             | <b>Diodes</b>             |                              |             | <b>IC protectors</b>  |  |
| D901        | 22380039                  | 1D4B42                       | QF101,QF102 | 252112                | △ ICPN15 <P/W>                                     |
| D904        | 224452702 or<br>224652702 | MTZ27B or<br>HZ27EB2         |             | Switch                |  |
|             | <b>Coil</b>               |                              | S101        | 25065364              | NSS-12138  |
| L101        | 231023                    | NCH-1062                     |             |                       |  |
|             | <b>Core</b>               |                              |             |                       | <b>HEADPHONE TERMINAL PC BOARD (NAAF-4274-1)</b>   |
| L102        | 230906                    | BL02RN2-R62                  | CIRCUIT NO. | PART NO.              | DESCRIPTION  |
|             | <b>Capacitors</b>         |                              | C483,C484   | 374721024             | 1000pF ± 5%, 50V, Plastic capacitors               |
| C101,C102   | 393121017                 | 100 μ F, 6.3V, Elect.        | P403        | 25045221              | HLJ0540-01-410, Terminal                           |
| C103        | 374724724                 | 4700pF ± 5%, 50V, Plastic    |             |                       | <b>OUTPUT VOLUME PC BOARD (NAAF-4276-1)</b>        |
| C105,C107   | 393121017                 | 100 μ F, 6.3V, Elect.        | CIRCUIT NO. | PART NO.              | DESCRIPTION  |
| C108,C110   | 374721044                 | 0.1 μ F ± 5%, 50V, Plastic   | P401A       | 2009990191            | NSAS-12P0257, Socket                               |
| C111        | 374724734                 | 0.047 μ F ± 5%, 50V, Plastic | P701        | 25055149              | NPLG-5P133, Plug                                   |
| C112        | 374721034                 | 0.01 μ F ± 5%, 50V, Plastic  | R491,R492   | 5104280               | N16RGM20KB30F, Variable resistor                   |
| C113        | 374722224                 | 2200pF ± 5%, 50V, Plastic    | S721        | 25030331              | NRSF-123-30SRRU, Rotary switch                     |
| C114-C116   | 374721044                 | 0.1 μ F ± 5%, 50V, Plastic   |             |                       | <b>SENSOR PC BOARD (NAETC-4277-1)</b>              |
| C118        | 354781009                 | 10 μ F, 50V, Elect.          | CIRCUIT NO. | PART NO.              | DESCRIPTION  |
| C119,C123   | 374721044                 | 0.1 μ F ± 5%, 50V, Plastic   | Q701        | 24130003              | GP1U50XS, IC                                       |
| C121,C128   | 393121017                 | 100 μ F, 6.3V, Elect.        | C718        | 354744709             | 47 μ F, 16V, Elect. capacitor                      |
| C124        | 354780229                 | 2.2 μ F, 50V, Elect.         |             |                       | <b>DISPLAY CIRCUIT PC BOARD (NADIS-4275-1/1A)</b>  |
| C125        | 374721034                 | 0.01 μ F ± 5%, 50V, Plastic  | CIRCUIT NO. | PART NO.              | DESCRIPTION  |
| C126        | 393180107                 | 1 μ F, 50V, Elect.           |             |                       | FL tube  |
| C127        | 354763309                 | 33 μ F, 35V, Elect.          | Q702        | 212101                | 7-BT-151GK   |
| C130,C132   | 374721034                 | 0.01 μ F ± 5%, 50V, Plastic  |             |                       | ICs  |
| C131        | 374724724                 | 4700pF ± 5%, 50V, Plastic    | Q701        | 22240521              | CXP50116-166                                       |
| C135        | 374722234                 | 0.022 μ F ± 5%, 50V, Plastic | Q703        | 222963 or<br>22240322 | LB1630 or<br>LB1639                                |
| C136,C137   | 374721034                 | 0.01 μ F ± 5%, 50V, Plastic  |             |                       | Transistors  |
| C138        | 393121017                 | 100 μ F, 6.3V, Elect.        | Q704        | 2212132 or<br>2212133 | 2SC2021-R or<br>2SC2021-S                          |
| C140        | 374721524                 | 1500pF ± 5%, 50V, Plastic    | Q705        | 2213183 or<br>2213184 | 2SA937-R or<br>2SA937-Q                            |
| C141,C147   | 374721044                 | 0.1 μ F ± 5%, 50V, Plastic   |             |                       | Diodes   |
| C142        | 393022217                 | 220 μ F, 6.3V, Elect.        | D701        | 224450623             | MTZ6.2C  |
| C146        | 374721034                 | 0.01 μ F ± 5%, 50V, Plastic  | D704        | 224450562             | MTZ5.6B  |
| C148,C163   | 393144707                 | 47 μ F, 16V, Elect.          | D705-D707   | 223163                | 1SS133   |
| C149        | 374721024                 | 1000pF ± 5%, 50V, Plastic    |             |                       | Capacitors   |
| C151-C153   | 393144707                 | 47 μ F, 16V, Elect.          | C703        | 391244707             | 47 μ F, 16V, Elect.                                |
| C161        | 374722234                 | 0.022 μ F ± 5%, 50V, Plastic | C704,C713   | 374721044             | 0.1 μ F ± 5%, 50V, Plastic                         |
| C162        | 374724734                 | 0.047 μ F ± 5%, 50V, Plastic | C714        | 354764709             | 47 μ F, 35V, Elect.                                |
| C165,C166   | 393144707                 | 47 μ F, 16V, Elect.          | C716        | 354781099             | 0.1 μ F, 50V, Elect.                               |
| C167,C168   | 393141017                 | 100 μ F, 16V, Elect.         |             |                       | Resistor   |
| C903,C904   | 374721044                 | 0.1 μ F ± 5%, 50V, Plastic   | R737        | 49163472406           | 4.7kohm × 6, 1/10W, Network                        |
| C905,C906   | 354752229                 | 2200 μ F, 2.5V, Elect.       |             |                       | Ceramic oscillator                                 |
| C909,C910   | 391222217                 | 220 μ F, 6.3V, Elect.        | X701        | 3010188               | CST4.50MGW040                                      |
| C911,C912   | 374722234                 | 0.022 μ F ± 5%, 50V, Plastic |             |                       | Switches   |
| C919        | 374721044                 | 0.1 μ F ± 5%, 50V, Plastic   | S701-S723   | 25035548              | NPS-111-S510                                       |
| C920,C921   | 354784709                 | 47 μ F, 50V, Elect.          |             |                       | Sockets  |
|             | <b>Resistors</b>          |                              | P101A       | 2006391255            | NSAS-12P0159                                       |
| R111        | 5210060                   | N06HR2.2KBD, Semi-fixed      | P105A       | 2006392450            | NSAS-24P0261                                       |
| R115,R116   | 5210066                   | N06HR22KBD, Semi-fixed       | P106A       | 2006392050            | NSAS-20P0259                                       |
| R118        | 5210066                   | N06HR22KBD, Semi-fixed       | P701A       | 2006391010            | NSAS-10P0158                                       |
| R138        | 5210064                   | N06HR10KBD, Semi-fixed       |             |                       | Holder   |
| R139        | 5210001                   | N06HR100BDM, Semi-fixed      |             |                       | 27190778A  |
|             | <b>Plugs</b>              |                              |             |                       | <b>POWER SUPPLY CIRCUIT PC BOARD (NAPS-4278-1)</b> |
| P101        | 25055150                  | NPLG-6P134                   | CIRCUIT NO. | PART NO.              | DESCRIPTION  |
| P103        | 25055139                  | NPLG-9P123                   | C941        | 3500065A              | △ DE7150F 103P AC400/125V, IS capacitor            |
| P104        | 25055149                  | NPLG-5P133                   |             |                       | △ NPS-111-L520, Power switch                       |
| P105        | 25055156                  | NPLG-12P140                  | S941        | 25035558              | △ Cover for C941                                   |
| P106        | 25055154                  | NPLG-10P138                  |             |                       |  |
| P108        | 25055151                  | NPLG-7P135                   |             |                       |  |
| P109        | 25055150                  | NPLG-6P134                   |             |                       |  |
| P110        | 25055038                  | NPLG-2P29                    |             |                       |  |
| P111,P112   | 25055045                  | NPLG-4P33                    |             |                       |  |
|             | <b>Sockets</b>            |                              |             |                       |  |
| P102        | 2009990192                | NSAS-8P0258                  |             |                       |  |
| P107        | 2009990193                | NSAS-20P0259                 |             |                       |  |

# PC BOARD PARTS LIST

## MODEL DX-708

### MAIN CIRCUIT PC BOARD (NAAR-4272-2)

| CIRCUIT NO. | PART NO.                          | DESCRIPTION                          | CIRCUIT NO. | PART NO.   | DESCRIPTION                  |
|-------------|-----------------------------------|--------------------------------------|-------------|------------|------------------------------|
|             |                                   |                                      |             |            | <b>Capacitors</b>            |
|             |                                   |                                      | C429,C430   | 373301014  | 100pF±5%,125V,Plastic        |
|             |                                   |                                      | C431-C434   | 393144707  | 47 μ F,16V,Elect.            |
|             |                                   |                                      | C437,C438   | 374722224  | 2200pF±5%,50V,Plastic        |
|             |                                   |                                      | C439,C440   | 374722734  | 0.027 μ F±5%,50V,Plastic     |
|             |                                   |                                      | C443,C444   | 374722224  | 2200pF±5%,50V,Plastic        |
|             |                                   |                                      | C449,C450   | 374722224  | 2200pF±5%,50V,Plastic        |
|             |                                   |                                      | C451,C452   | 372122024  | 2000pF±5%,50V,Styrole        |
|             |                                   |                                      | C453,C454   | 373301014  | 100pF±5%,125V,Plastic        |
|             |                                   |                                      | C455-C458   | 393144707  | 47 μ F,16V,Elect.            |
|             |                                   |                                      | C459,C460   | 374721034  | 0.01 μ F±5%,50V,Plastic      |
|             |                                   |                                      | C461,C462   | 393083317  | 330 μ F,50V,Elect.           |
|             |                                   |                                      | C463-C468   | 374722234  | 0.022 μ F±5%,50V,Plastic     |
|             |                                   |                                      | C469-C472   | 373301014  | 100pF±5%,125V,Plastic        |
|             |                                   |                                      | C474        | 374722234  | 0.022 μ F±5%,50V,Plastic     |
|             |                                   |                                      | C475,C476   | 393144707  | 47 μ F,16V,Elect.            |
|             |                                   |                                      | C477-C480   | 373302714  | 270pF±5%,125V,Plastic        |
|             |                                   |                                      | C481,C482   | 373301014  | 100pF±5%,125V,Plastic        |
|             |                                   |                                      | C503        | 393022217  | 220 μ F,6.3V,Elect.          |
|             |                                   |                                      | C508,C510   | 393021017  | 100 μ F,6.3V,Elect.          |
|             |                                   |                                      | C603        | 393180107  | 1 μ F,50V,Elect.             |
|             |                                   |                                      | C605        | 374724734  | 0.047 μ F±5%,50V,Plastic     |
|             |                                   |                                      | C606        | 374724744  | 0.47 μ F±5%,50V,Plastic      |
|             |                                   |                                      | C951,C952   | 374721044  | 0.1 μ F±5%,50V,Plastic       |
|             |                                   |                                      | C953        | 374724744  | 0.47 μ F±5%,50V,Plastic      |
|             |                                   |                                      | C954,C955   | 393154727  | 4700 μ F,25V,Elect.          |
|             |                                   |                                      | C956,C957   | 374722244  | 0.22 μ F±5%,50V,Plastic      |
|             |                                   |                                      | C958        | 393122217  | 220 μ F,6.3V,Elect.          |
|             |                                   |                                      | C960-C962   | 393144707  | 47 μ F,16V,Elect.            |
|             |                                   |                                      | C963-C966   | 374721044  | 0.1 μ F±5%,50V,Plastic       |
|             |                                   |                                      | C967-C970   | 354784719  | 470 μ F,50V,Elect.           |
|             |                                   |                                      | C971        | 393144707  | 47 μ F,16V,Elect.            |
|             |                                   |                                      | C974        | 374721044  | 0.1 μ F±5%,50V,Plastic       |
|             |                                   |                                      | C976        | 374721034  | 0.01 μ F±5%,50V,Plastic      |
|             |                                   |                                      |             |            | <b>Resistors</b>             |
|             |                                   |                                      | R951,R952   | 442520394  | 3.9ohm,1/2W,Metal oxide film |
|             |                                   |                                      |             |            | <b>Relay</b>                 |
|             |                                   |                                      | RL601       | 25065174   | NRL-2P1A-DC12-09             |
|             |                                   |                                      |             |            | <b>Terminals</b>             |
|             |                                   |                                      | P111        | 25045172   | HSJ1003-01-020               |
|             |                                   |                                      | P401        | 25045351   | NPJ-4PDWR197                 |
|             |                                   |                                      |             |            | <b>Plugs</b>                 |
|             |                                   |                                      | P102        | 25055148   | NPLG-4P132                   |
|             |                                   |                                      | P107        | 25055154   | NPLG-10P138                  |
|             |                                   |                                      | P402        | 25055150   | NPLG-6P134                   |
|             |                                   |                                      |             |            | <b>Sockets</b>               |
|             |                                   |                                      | JS401       | 25050267   | NSCT-3P95                    |
|             |                                   |                                      |             | 2009990132 | NSAS-2P0208                  |
|             |                                   |                                      |             |            | <b>Holder</b>                |
|             |                                   |                                      |             | 27190751   |                              |
|             |                                   |                                      |             |            | <b>ICs</b>                   |
| Q116        | 24120031                          | TOTX178                              |             |            |                              |
| Q302        | 222755                            | 74HCU04P                             |             |            |                              |
| Q401,Q402   | 22240520                          | SM5861AP                             |             |            |                              |
| Q403-Q408   | 222902                            | NJM5532D-D                           |             |            |                              |
| Q417        | 222654                            | NJM4556D                             |             |            |                              |
| Q501        | 22240288                          | SM5813AP                             |             |            |                              |
| Q502        | 226027                            | HCPL-2601                            |             |            |                              |
| Q953        | 222811                            | NJM4558D-D                           |             |            |                              |
| Q954,Q955   | 222780053                         | 78L05                                |             |            |                              |
| Q956        | 222780055MIT                      | M5F78M05                             |             |            |                              |
|             |                                   |                                      |             |            | <b>Transistors</b>           |
| Q409,Q410   | 2213090 or<br>2213590             | DTA114YS or<br>RN2207                |             |            |                              |
| Q411,Q412   | 2212524 or<br>2212525             | 2SK363-GR or<br>2SK363-BL            |             |            |                              |
| Q413,Q414   | 2211705 or<br>2211706             | 2SD655-E or<br>2SD655-F              |             |            |                              |
| Q415,Q416   | 2213090 or<br>2213590             | DTA114YS or<br>RN2207                |             |            |                              |
| Q503        | 221281 or<br>2213570              | DTC114YS or<br>RN1207                |             |            |                              |
| Q504        | 2211254 or<br>2211255             | 2SC1815-Y or<br>2SC1815-GR           |             |            |                              |
| Q601,Q604   | 221281 or<br>2213570              | DTC114YS or<br>RN1207                |             |            |                              |
| Q602        | 2213090 or<br>2213590             | DTA114YS or<br>RN2207                |             |            |                              |
| Q603        | 2211945                           | 2SK246-GR                            |             |            |                              |
| Q951        | 2201284,<br>2201285 or<br>2201286 | 2SD882-R,<br>2SD882-Q or<br>2SD882-P |             |            |                              |
| Q952        | 2201274,<br>2201275 or<br>2201276 | 2SB772-R,<br>2SB772-Q or<br>2SB772-P |             |            |                              |
|             |                                   |                                      |             |            | <b>Diodes</b>                |
| D601,D607   | 223163                            | 1SS133                               |             |            |                              |
| D608,D611   | 223163                            | 1SS133                               |             |            |                              |
| D612        | 224450822                         | MTZ8.2B                              |             |            |                              |
| D613        | 223163                            | 1SS133                               |             |            |                              |
| D951-D954   | 22380045                          | RL-203                               |             |            |                              |
|             |                                   |                                      |             |            | <b>Cores</b>                 |
| L102,R303   | 230906                            | BL02RN2-R62                          |             |            |                              |
| R305,R306   | 230906                            | BL02RN2-R62                          |             |            |                              |
|             |                                   |                                      |             |            | <b>Coil</b>                  |
| L301        | 231023                            | NCH-1062                             |             |            |                              |
|             |                                   |                                      |             |            | <b>X'tal</b>                 |
| X302        | 3010189                           | DOC-80S                              |             |            |                              |
|             |                                   |                                      |             |            | <b>Capacitors</b>            |
| C191        | 354744709                         | 47 μ F,16V,Elect.                    |             |            |                              |
| C402,C403   | 393021017                         | 100 μ F,6.3V,Elect.                  |             |            |                              |
| C405-C408   | 374722234                         | 0.022 μ F±5%,50V,Plastic             |             |            |                              |
| C409,C410   | 393021017                         | 100 μ F,6.3V,Elect.                  |             |            |                              |
| C415,C416   | 393121027                         | 1000 μ F,6.3V,Elect.                 |             |            |                              |
| C417,C418   | 374722234                         | 0.022 μ F±5%,50V,Plastic             |             |            |                              |
| C423        | 374721044                         | 0.1 μ F±5%,50V,Plastic               |             |            |                              |
| C425-C428   | 373302714                         | 270pF±5%,125V,Plastic                |             |            |                              |

## DIGITAL CIRCUIT PC BOARD (NADG-4273-2/2A)

| CIRCUIT NO. | PART NO.     | DESCRIPTION                        |
|-------------|--------------|------------------------------------|
|             |              | ICs                                |
| Q102        | 22240404     | CXA1571S                           |
| Q104        | 22240366     | CXA1372S                           |
| Q105        | 22240487     | CXD2500AQ                          |
| Q106        | 22240168     | STA341M-L                          |
| Q107        | 222090       | S2FR04                             |
| Q109        | 22240033     | LA6500                             |
| Q110,Q111   | 22240034     | LA6510                             |
| Q114        | 22240018     | M51943ASL                          |
| Q901        | 222780055MIT | M5F78M05                           |
| Q902        | 222790055MIT | M5F79M05                           |
|             |              | Transistors                        |
| Q101,Q113   | 2211503 or   | 2SA950-O or                        |
| Q904        | 2211504      | 2SA950-Y                           |
| Q103        | 221281 or    | DTC114YS or                        |
|             | 2213570      | RN1207                             |
| Q112        | 2211163 or   | 2SC2120-O or                       |
|             | 2211164      | 2SC2120-Y                          |
| Q115        | 2211454 or   | 2SA1015-Y or                       |
|             | 2211455      | 2SA1015-GR                         |
|             |              | Diodes                             |
| D101,D903   | 223163       | 1SS133                             |
| D102,D103   | 224451102    | MTZ11B                             |
| D901,D902   | 22380039     | 1D4B42                             |
| D904        | 224452702 or | MTZ27B or                          |
|             | 224652702    | HZ27EB2                            |
|             |              | Coil                               |
| L101        | 231023       | NCH-1062                           |
|             |              | Core                               |
| L102        | 230906       | BL02RN2-R62                        |
|             |              | Capacitors                         |
| C101,C102   | 393121017    | 100 $\mu$ F,6.3V,Elect.            |
| C103        | 374724724    | 4700pF $\pm$ 5%,50V,Plastic        |
| C105,C107   | 393121017    | 100 $\mu$ F,6.3V,Elect.            |
| C108,C110   | 374721044    | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C111        | 374724734    | 0.047 $\mu$ F $\pm$ 5%,50V,Plastic |
| C112        | 374721034    | 0.01 $\mu$ F $\pm$ 5%,50V,Plastic  |
| C113        | 374722224    | 2200pF $\pm$ 5%,50V,Plastic        |
| C114-C116   | 374721044    | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C118        | 354781009    | 10 $\mu$ F,50V,Elect.              |
| C119,C123   | 374721044    | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C121,C128   | 393121017    | 100 $\mu$ F,6.3V,Elect.            |
| C124        | 354780229    | 2.2 $\mu$ F,50V,Elect.             |
| C125        | 374721034    | 0.01 $\mu$ F $\pm$ 5%,50V,Plastic  |
| C126        | 393180107    | 1 $\mu$ F,50V,Elect.               |
| C127        | 354763309    | 33 $\mu$ F,35V,Elect.              |
| C130,C132   | 374721034    | 0.01 $\mu$ F $\pm$ 5%,50V,Plastic  |
| C131        | 374724724    | 4700pF $\pm$ 5%,50V,Plastic        |
| C135        | 374722234    | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C136,C137   | 374721034    | 0.01 $\mu$ F $\pm$ 5%,50V,Plastic  |
| C138        | 393121017    | 100 $\mu$ F,6.3V,Elect.            |
| C140        | 374721524    | 1500pF $\pm$ 5%,50V,Plastic        |
| C141,C147   | 374721044    | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C142        | 393022217    | 220 $\mu$ F,6.3V,Elect.            |
| C146        | 374721034    | 0.01 $\mu$ F $\pm$ 5%,50V,Plastic  |
| C148,C163   | 393144707    | 47 $\mu$ F,16V,Elect.              |
| C149        | 374721024    | 1000pF $\pm$ 5%,50V,Plastic        |

| CIRCUIT NO. | PART NO.   | DESCRIPTION                        |
|-------------|------------|------------------------------------|
|             |            | Capacitors                         |
| C151-C153   | 393144707  | 47 $\mu$ F,16V,Elect.              |
| C161        | 374722234  | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C162        | 374724734  | 0.047 $\mu$ F $\pm$ 5%,50V,Plastic |
| C165,C166   | 393144707  | 47 $\mu$ F,16V,Elect.              |
| C167,C168   | 393141017  | 100 $\mu$ F,16V,Elect.             |
| C903,C904   | 374721044  | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C905,C906   | 354752229  | 2200 $\mu$ F,25V,Elect.            |
| C909,C910   | 391222217  | 220 $\mu$ F,6.3V,Elect.            |
| C911,C912   | 374722234  | 0.022 $\mu$ F $\pm$ 5%,50V,Plastic |
| C917,C918   | 354752229  | 2200 $\mu$ F,25V,Elect.            |
| C919        | 374721044  | 0.1 $\mu$ F $\pm$ 5%,50V,Plastic   |
| C920,C921   | 354784709  | 47 $\mu$ F,50V,Elect.              |
|             |            | Resistors                          |
| R111        | 5210060    | N06HR2.2KBD,Semi-fixed             |
| R115,R116   | 5210066    | N06HR22KBD,Semi-fixed              |
| R118        | 5210066    | N06HR22KBD,Semi-fixed              |
| R138        | 5210064    | N06HR10KBD,Semi-fixed              |
| R139        | 5210001    | N06HR100BDM,Semi-fixed             |
|             |            | Plugs                              |
| P101        | 25055150   | NPLG-6P134                         |
| P103        | 25055139   | NPLG-9P123                         |
| P104        | 25055149   | NPLG-5P133                         |
| P105        | 25055156   | NPLG-12P140                        |
| P106        | 25055154   | NPLG-10P138                        |
| P108        | 25055151   | NPLG-7P135                         |
| P109        | 25055150   | NPLG-6P134                         |
| P110        | 25055038   | NPLG-2P29                          |
| P111,P112   | 25055045   | NPLG-4P33                          |
|             |            | Sockets                            |
| P102        | 2009990192 | NSAS-8P0258                        |
| P107        | 2009990193 | NSAS-20P0259                       |
|             |            | IC protectors                      |
| QF101,QF102 | 252112     | $\Delta$ ICPN15 <P/W>              |
|             |            | Switch                             |
| S101        | 25065364   | NSS-12138                          |

## HEADPHONE TERMINAL PC BOARD (NAAF-4274-2)

| CIRCUIT NO. | PART NO.  | DESCRIPTION                            |
|-------------|-----------|--|
| C483,C484   | 374721024 | 1000pF $\pm$ 5%,50V,Plastic capacitors |
| P403        | 25045221  | HLJ0540-01-410,Terminal                |

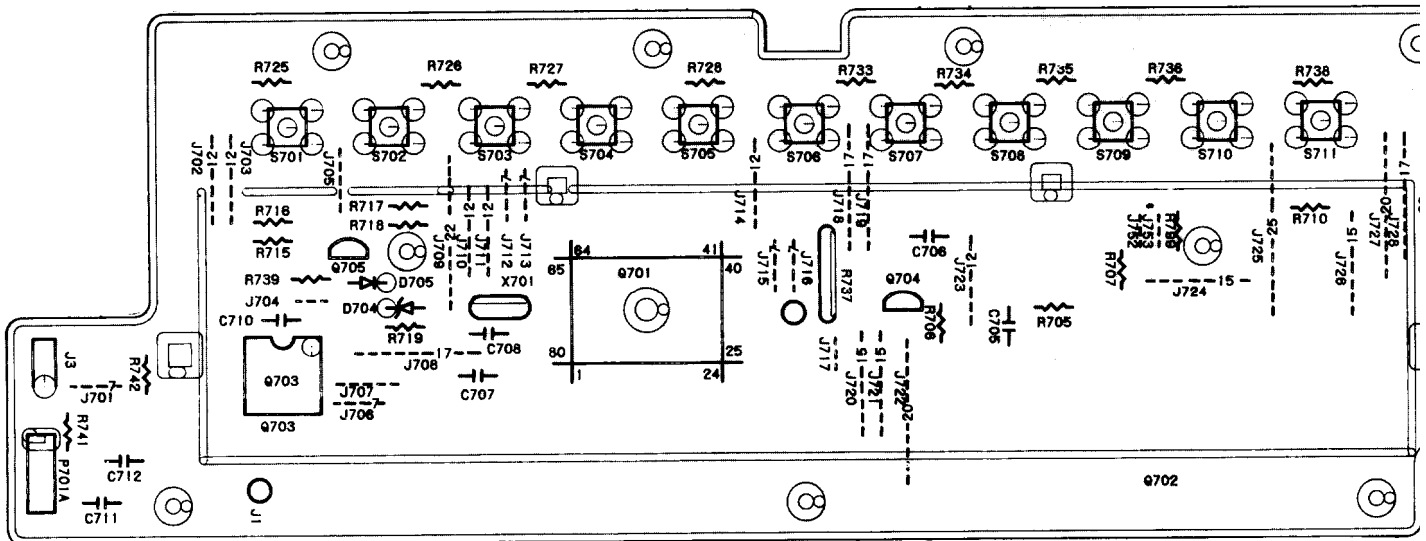
## OUTPUT VOLUME PC BOARD (NAAF-4276-2)

| CIRCUIT NO. | PART NO.   | DESCRIPTION                     |
|-------------|------------|---------------------------------|
| P401A       | 2009990191 | NSAS-12P0257,Socket             |
| P701        | 25055149   | NPLG-5P133,Plug                 |
| R491,R492   | 5104280    | N16RGM20KB30F,Variable resistor |
| S721        | 25030331   | NRSF-123-30SRRU,Rotary switch   |

## SENSOR PC BOARD (NAETC-4277-2)

| CIRCUIT NO. | PART NO.  | DESCRIPTION                     |
|-------------|-----------|---------------------------------|
| Q701        | 24130003  | GP1U50XS,IC                     |
| C718        | 354744709 | 47 $\mu$ F,16V,Elect. capacitor |

# PC BOARD VIEW FROM BOTTOM SIDE



## DISPLAY CIRCUIT PC BOARD (NADIS-4275-2/2A)

| CIRCUIT NO. | PART NO.              | DESCRIPTION                        |
|-------------|-----------------------|------------------------------------|
|             | FL tube               |                                    |
| Q702        | 212101                | 7-BT-151GK                         |
|             | ICs                   |                                    |
| Q701        | 22240521              | CXP50116-166                       |
| Q703        | 222963 or<br>22240322 | LB1630 or<br>LB1639                |
|             | Transistors           |                                    |
| Q704        | 2212132 or<br>2212133 | 2SC2021-R or<br>2SC2021-S          |
| Q705        | 2213183 or<br>2213184 | 2SA937-R or<br>2SA937-Q            |
|             | Diodes                |                                    |
| D701        | 224450623             | MTZ6.2C                            |
| D704        | 224450562             | MTZ5.6B                            |
| D705-D707   | 223163                | 1SS133                             |
|             | Capacitors            |                                    |
| C703        | 391244707             | 47 $\mu$ F, 16V, Elect.            |
| C704, C713  | 374721044             | 0.1 $\mu$ F $\pm$ 5%, 50V, Plastic |
| C714        | 354764709             | 47 $\mu$ F, 35V, Elect.            |
| C716        | 354781099             | 0.1 $\mu$ F, 50V, Elect.           |
|             | Resistor              |                                    |
| R737        | 49163472406           | 4.7kohm $\times$ 6, 1/10W, Network |
|             | Ceramic oscillator    |                                    |
| X701        | 3010188               | CST4.50MGW040                      |
|             | Switches              |                                    |
| S701-S723   | 25035548              | NPS-111-S510                       |
|             | Sockets               |                                    |
| P101A       | 2006391255            | NSAS-12P0159                       |
| P105A       | 2006392450            | NSAS-24P0261                       |
| P106A       | 2006392050            | NSAS-20P0259                       |
| P701A       | 2006391010            | NSAS-10P0158                       |
|             | Holder                |                                    |
|             | 27190778A             |                                    |

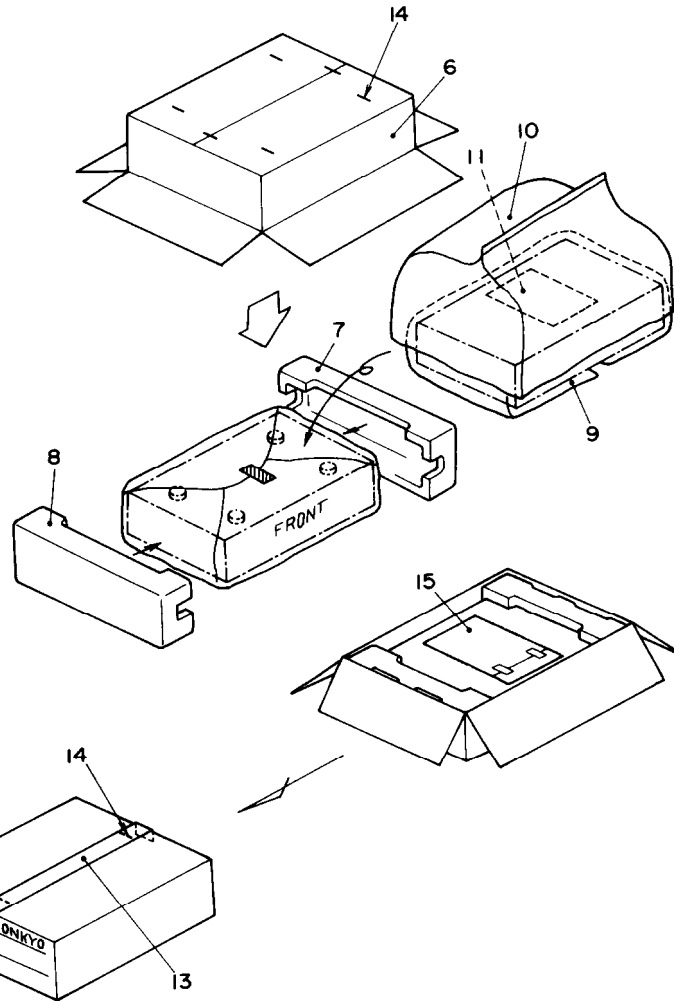
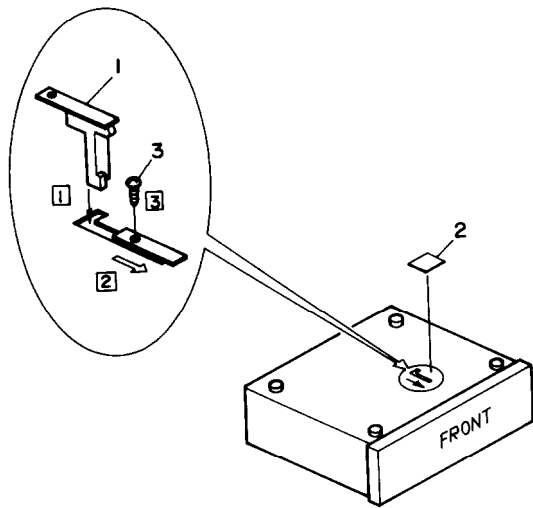
## POWER SUPPLY CIRCUIT PC BOARD (NAPS-4278-2)

| CIRCUIT NO. | PART NO.             | DESCRIPTION  |
|-------------|----------------------|--|
| C941        | 3500065A             | $\Delta$ DE7150F 103P AC400/125V, IS capacitor                 |
| S941        | 25035558<br>27301216 | $\Delta$ NPS-111-L520, Power switch<br>$\Delta$ Cover for C941 |

NOTE: <P>: Only 230V model  
<W>: Only Worldwide model

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

# PACKING VIEW



## MODEL DX-706

## MODEL DX-708

| REF.NO. | PART NO.            | DESCRIPTION                        |
|---------|---------------------|------------------------------------|
| 1       | 29335034A           | Lock lever                         |
| 2       | 29361360            | Label                              |
| 3       | 834430088           | 3TTS+8B(BC),Self-tapping screw     |
| 6       | 29052293            | Master carton box <B>              |
|         | 29052305            | Master carton box <S>              |
| 7       | 29091518A           | Pad L                              |
| 8       | 29091519A           | Pad R                              |
| 9       | 29095012-1          | Protection sheet                   |
| 10      | 29100105            | 620×550mm,Styrene bag              |
| 11      | 29355180            | Caution sheet                      |
| 13      | 29110071            | Damplon tape                       |
| 14      | 282301              | Sealing hook                       |
| 15      | Accessory bag ass'y |                                    |
|         | 2010098A            | Connection cord                    |
|         | 2010200             | Cord RI                            |
|         | 24140217A           | RC-217C,Remote control transmitter |
|         | 3010054             | UM-3,Two batteries                 |
|         | 29100097            | 350×250mm,Styrene bag              |
|         | 29341661            | Instruction manual <D>             |
|         | 29341663            | Instruction manual <P/W>           |
|         | 29365019A           | Warranty card <N>                  |
|         | 29365024A           | Warranty card <F>                  |
|         | 29100107            | Styrene bag for warranty card <F>  |
|         | 29358002J           | Service station list <N>           |
|         | 25055040            | CV-K-2,Conversion plug <W>         |

| REF.NO. | PART NO.            | DESCRIPTION                        |
|---------|---------------------|------------------------------------|
| 1       | 29335034A           | Lock lever                         |
| 2       | 29361360            | Label                              |
| 3       | 834430088           | 3TTS+8B(BC),Self-tapping screw     |
| 6       | 29052299            | Master carton box                  |
| 7       | 29091518A           | Pad L                              |
| 8       | 29091519A           | Pad R                              |
| 9       | 29095012-1          | Protection sheet                   |
| 10      | 29100105            | 620×550mm,Styrene bag              |
| 11      | 29355180            | Caution sheet                      |
| 13      | 29110071            | Damplon tape                       |
| 14      | 282301              | Sealing hook                       |
| 15      | Accessory bag ass'y |                                    |
|         | 2010238             | Connection cord                    |
|         | 2010200             | Cord RI                            |
|         | 24140218A           | RC-218C,Remote control transmitter |
|         | 3010054             | UM-3,Two batteries                 |
|         | 29100097            | 350×250mm,Styrene bag              |
|         | 29341661            | Instruction manual <D>             |
|         | 29341663            | Instruction manual <P/W>           |
|         | 29365019A           | Warranty card <N>                  |
|         | 29365024A           | Warranty card <F>                  |
|         | 29100107            | Styrene bag for warranty card <F>  |
|         | 29358002J           | Service station list <N>           |
|         | 25055040            | CV-K-2,Conversion plug <W>         |



- ① . Insert the lock lever into the hole on the bottom board as shown left.
- ② . Move the lock lever to the arrow mark.
- ③ . Tighten the screw to secure the lock lever with

NOTE:<D> : Only 120V models  
<P> : Only 230V/240V models  
<W> : Only Worldwide model  
<N> : Only U.S.A. model  
<F> : Only French model  
<S> : Only Silver model  
<B> : Only black model

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