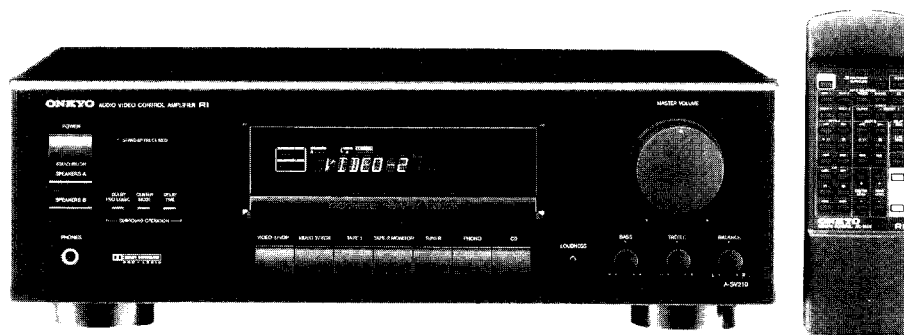


# ONKYO® SERVICE MANUAL

## Integrated Stereo Amplifier MODEL A-SV210



UD

120V AC, 60Hz

### 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 PART 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.

**ONKYO**  
**AUDIO COMPONENTS**

# SPECIFICATIONS

## AMPLIFIER SECTION

Power Output:

**Stereo mode**

Front L/R channels

100 watts per channel min. RMS. at 8 ohms, both channels driven, from 40 Hz to 20,000 Hz, with no more than 0.08% total harmonic distortion.

**Surround mode**

Front L/R and center channels

60 watts per channel min. RMS at 8 ohms, with no more than 0.08% total harmonic distortion at 1,000 Hz

Rear channels

15 watts per channel min. RMS at 8 ohms, with no more than 0.3% total harmonic distortion at 1,000 Hz

Total Harmonic Distortion: 0.08% at rated power (FRONT)

IM Distortion: 0.08% at rated power (FRONT)

Damping Factor: 50 at 8 ohms (FRONT)

Sensitivity and Impedance: Phono: 2.5 mV/50 kohms  
CD/Tape Play: 150 mV/50 kohms  
Tape Rec: 150 mV/2.2 kohms

Mono out (SUBWOOFER): 1V 2.2 kohms

Phono Overload: 120 mV RMS. at 1,000 Hz, 0.5% THD.

Frequency Response: 20 to 30,000 Hz, +/-1 dB

RIAA Deviation: 20 to 20,000 Hz, +/-0.8 dB

Tone Control: BASS: +/-10 dB at 100 Hz

TREBLE: +/-10 dB at 10,000 Hz

Signal to Noise Ratio: PHONO: 80 dB (IHF A, 5 mV input)

CD/TAPE: 100 dB (IHF A)

## VIDEO SECTION

Signal sensitivity and impedance:

VDP/VCR input, output: 1 Vp-p, 75 ohms

## General

Power Supply: AC120 V, 60 Hz

Dimensions (W x H x D): 455 x 150 x 331 mm  
17-15/16" x 5-7/8" x 13-1/16"

Weight: 9.8 kg (21.6 lbs.)

Specifications and features are subject to change without notice.

# PRECAUTIONS

## 1.Replacing the fuses



This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.



Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce damier est indique la qu le present symbol est appose.

## CIRCUIT NO. PART NO. DESCRIPTION

F901 252166Y 6.3A-UL/T-237

## 2.Insulation resistance mesurement (Only U.S.A. model)

Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panell  
Specifications; More than 10 MΩ at 500V.

# ADJUSTMENT & CHECKING PROCEDURES

## 1. Preparations

- 1) Place the unit on the workbench.  
(There should be about 15 mm of space between the base plate of the unit and the work surface.)
- 2) Set up the unit as follows.
  - (1) No load
  - (2) No signal
  - (3) Volume turned all the way down
  - (4) Speaker switch OFF
  - (5) Power switch OFF

Note: Check the following points before making adjustments

- (1) The power switch should be OFF.
- (2) The interior of the unit should not be warm.

## 2. Idling current adjustment

- 1) Turn the power switch ON and allow the unit to warm up for about 10 minutes.  
Set the voltage at P521,522 and 821 on the NAAR-5139 circuit board to 4.5~5.5 mV by adjusting R537,538 and 837.
- 2) After about 4 ~ 6 minutes heat-running.  
Set the voltage at P521,522 and 821 on the NAAR-5139 circuit board to 6.5~7.0 mV by adjusting R537,538 and 837.

## 3. Check of Operation

### 3.1 RELAY

The relay shall be ON about 5 seconds after POWER is ON and shall be OFF immediately after POWER is OFF.

### 3.2 VOLTAGE DETECTION OF PROTECTORS

a. Push POWER button while pushing down CD button to display "TEST-" on FL Tube, and then push VIDEO-1 button and get the test mode display "TEST-1-01".

b. Make the relay ON without load. The relay shall be open immediately after DC +1.5~3.0 V is applied at CD input in regard to FRONT MAIN L/R and P622a in regard to CENTER/REAR by using the test board.

The same operation shall be got by DC -1.5~3.0 V.

NOTE1: No load or no shorting shall be applied to the speaker terminals.

NOTE2: The relay shall be recover in one second in "TEST-1-01". So it shall not be hold OFF.

### 3.3 OPERATIONS OF CURRENT-DETECTION PROTECTORS OF FRONT MAIN L/R, CENTER AND REAR L/R.

a. Get the same status of "TEST-1-01" as Item 3.2.a.

b. The relay shall not be OFF at 2 ohms load and under clipping point (10% distortion) when 1 kHz input is supplied at CD input in regard to FRONT MAIN L/R and CENTER (15 V for REAR L/R) and no load by using the designated circuit for INTEGRA amplifier series.

NOTE1: item b. may not be tested under "TEST-1-01".

### 3-4. REMOTE CONTROL

a. Confirm THAT specified operations for each button are made.

b. Connect a cassette deck and CD with the unit, and confirm it's operations.

### 3-5. MISCELLANEOUS

a. Confirm AC OUTLET switching operation.

b. Confirm video in/out operations.

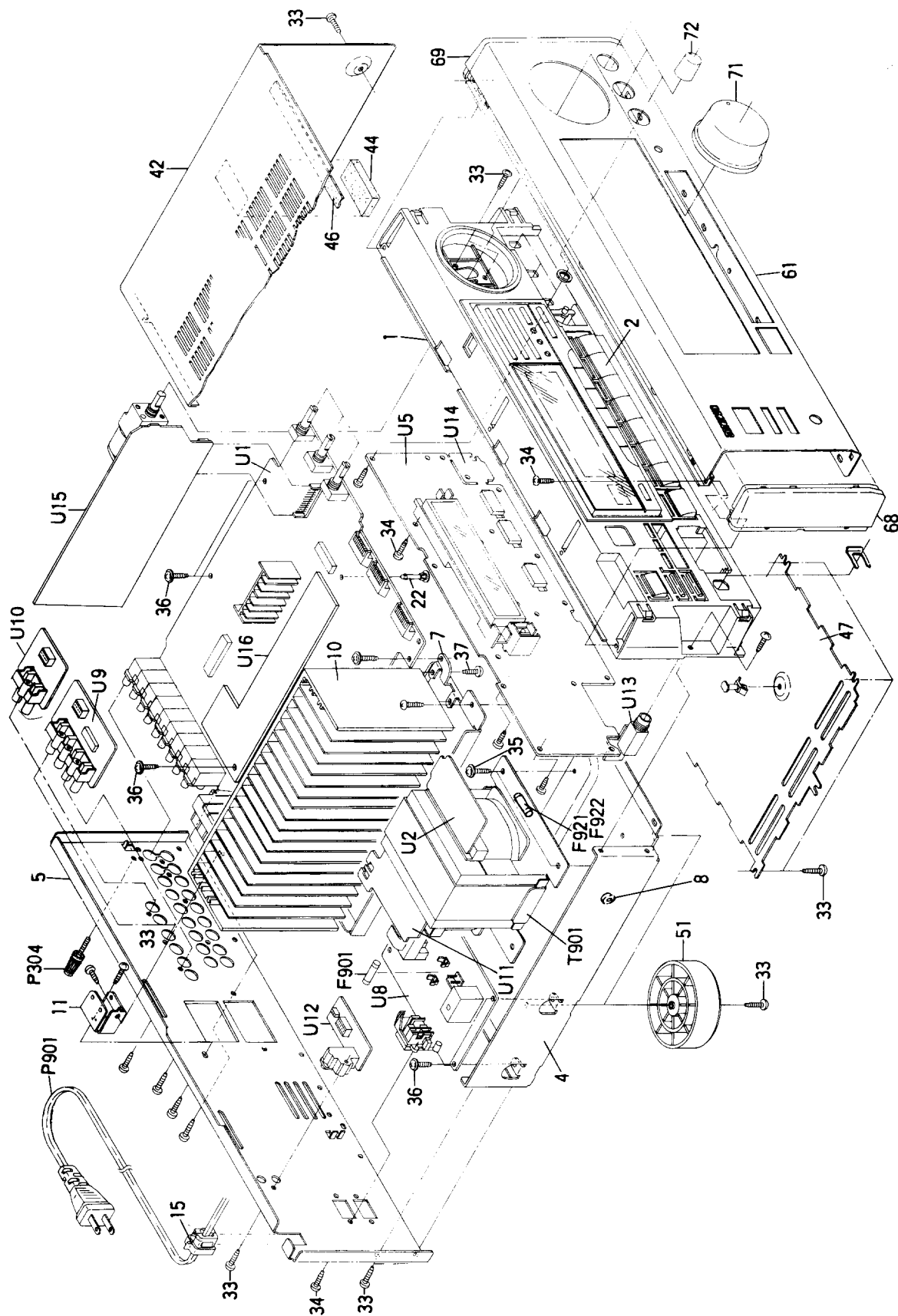
c. Confirm SELECTOR MUTING operations.

## 4. Initial Setting For Shipping

Push POWER button while pressing down CD button, then pull the power cord off within 5 seconds of the display "TEST-" on FL Tube. By this procedure, "CLEAR" will be displayed and all memories will be initialized.

Set the master volume to minimum position, TONE volume to center and BALANCE volume to center.

# CHASSIS-EXPLODED VIEW



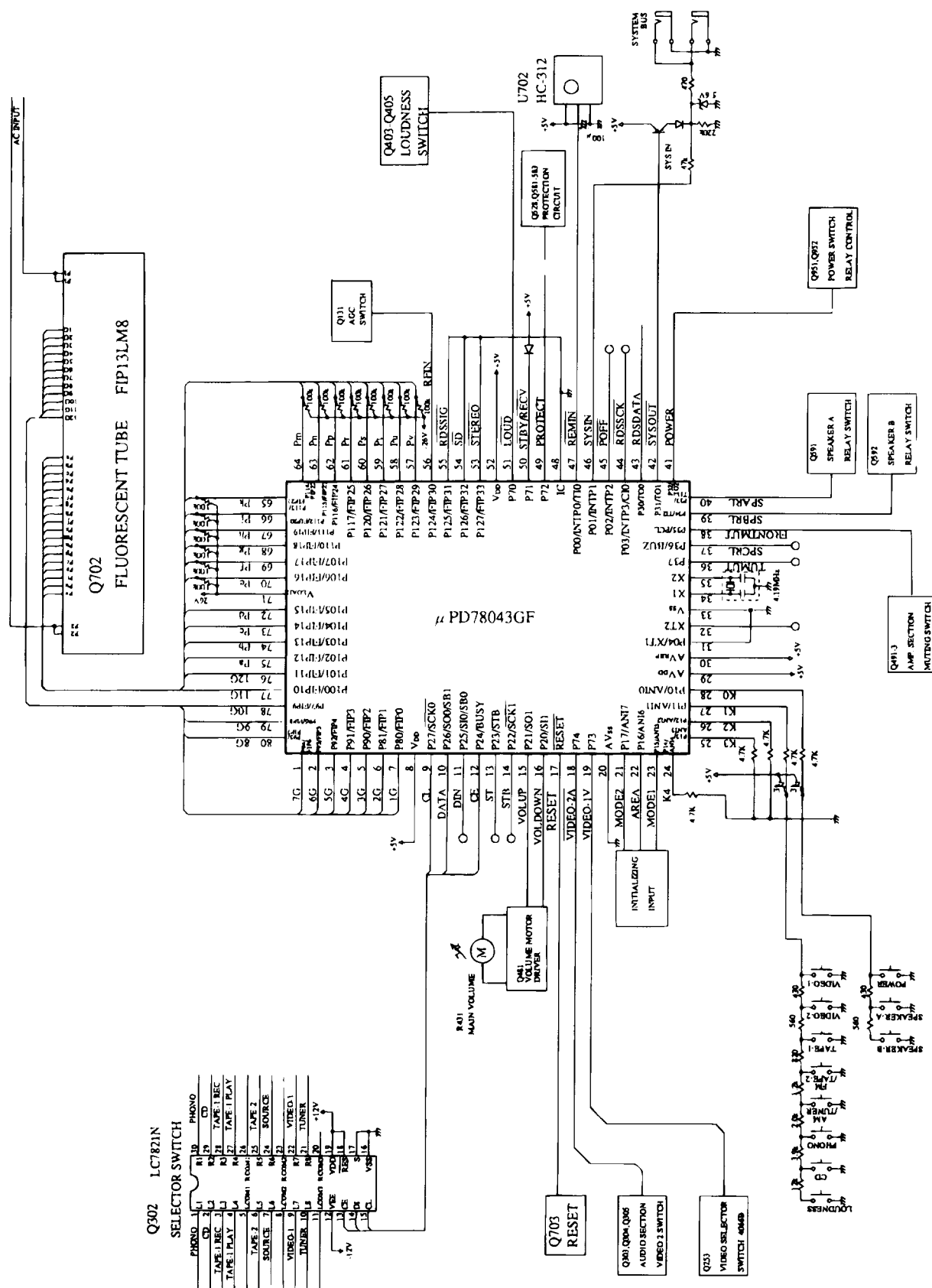
## PARTS LIST

| REF. NO.          | PART NO.                                                        | DESCRIPTION                                          | REF. NO.          | PART NO.                               | DESCRIPTION                                      |
|-------------------|-----------------------------------------------------------------|------------------------------------------------------|-------------------|----------------------------------------|--------------------------------------------------|
| 1                 | 27110836Y                                                       | Front Bracket                                        | Q523,524,<br>Q823 | 2201663 or<br>2201664 or<br>2201665 or | 2SA1492-O or<br>-Y or<br>-P or                   |
| 4                 | 27100278BY                                                      | Chassis                                              |                   | 2202833 or<br>2202832                  | 2SA1962-O or<br>-R                               |
| 5                 | 27122000Y                                                       | Rear Panel                                           |                   | 2202373 or<br>2202374 or<br>2202375 or | 2SC4466-O or<br>-Y or<br>-P or                   |
| 7                 | 27130727Y                                                       | Bracket(H)                                           |                   | 2202923 or<br>2202922                  | 2SC5196-O or<br>-R                               |
| 10                | 27160330AY                                                      | Heat Sink                                            | Q822              | 2202363 or<br>2202364 or<br>2202365 or | 2SA1693-O or<br>-Y or<br>-P or                   |
| 11                | 27141623Y                                                       | Retainer(H)                                          |                   | 2202913 or<br>2202912                  | 2SA1939-O or<br>-R                               |
| 13                | 27141530AY                                                      | Retainer                                             |                   | U1                                     | 1A563539-1                                       |
| 15                | 27300750                                                        | Δ Bushing Cord                                       |                   | U2                                     | 1A563540-1                                       |
| 22                | 27190524                                                        | Holder                                               |                   | U5                                     | 1A563597-4                                       |
| 32                | 801433Y                                                         | 2SMS8W.SW+14B, Screw                                 | Q824              | 1A563500-4                             | Power Supply Circuit Pc Board Ass'y, NAPS-4900-4 |
| 33                | 838130088Y                                                      | 3TTB+8B, Screw                                       |                   | U9                                     | 1A563501-4                                       |
| 34                | 833430080Y                                                      | 3TTP+8P(BC), Screw                                   |                   | U10                                    | 1A563541-1                                       |
| 35                | 830440089Y                                                      | 4TTC+8B(BC), Screw                                   |                   | U11                                    | 1A563503-4                                       |
| 37                | 834430108Y                                                      | 3TTS+10B(BC), Screw                                  |                   | U12                                    | 1A563504-4                                       |
| 33                | 834230108Y                                                      | 3TTS+10B(Ni), Screw, Silver Model Only               |                   | U13                                    | 1A563505-4                                       |
| 39                | 87644010Y                                                       | W4X10(BC), Washer                                    |                   | U14                                    | 1A563506-4                                       |
| 42                | 27184476BY                                                      | Top Cover                                            |                   | U15                                    | 1A563508-2                                       |
| 43                | 838430088Y                                                      | 3TTB+8B(BC), Screw                                   |                   | U16                                    | 1A563509-2                                       |
| 45                | 28141306Y                                                       | Cushion, t6 x 30 x 5                                 |                   |                                        |                                                  |
| 47                | 27170302AY                                                      | Bottom Panel                                         |                   |                                        |                                                  |
| 51                | 27175300Y                                                       | Leg Ass'y                                            |                   |                                        |                                                  |
| 61                | 27211667Y                                                       | Front Panel                                          |                   |                                        |                                                  |
| 62                | 8910301                                                         | CS Ring, CS-3(SUS)                                   |                   |                                        |                                                  |
| 63                | 28191674AY                                                      | Clear Plate                                          |                   |                                        |                                                  |
| 64                | 28198782Y                                                       | Facet                                                |                   |                                        |                                                  |
| 67                | 28135199Y                                                       | Badge                                                |                   |                                        |                                                  |
| 68                | 28125255-6Y                                                     | End Cap(L)                                           |                   |                                        |                                                  |
| 69                | 28125256-6Y                                                     | End Cap(R)                                           |                   |                                        |                                                  |
| 71                | 28325059Y                                                       | Knob(Vol)                                            |                   |                                        |                                                  |
| 72                | 28324845BY                                                      | Knob(Lev)                                            |                   |                                        |                                                  |
|                   | 29360778Y                                                       | Label (Flash)                                        |                   |                                        |                                                  |
|                   | 29361777Y                                                       | Label (UPC)                                          |                   |                                        |                                                  |
| T901              | 2301062Y                                                        | Δ NPT-1227D, Power Transformer                       |                   |                                        |                                                  |
| P901              | 253192HITY                                                      | Δ AS-UC-6#18, Power Supply Cord                      |                   |                                        |                                                  |
| F901,921,922      | 252166Y                                                         | Δ 6.3A-UL/T-237, Fuse                                |                   |                                        |                                                  |
| Q521,522,<br>Q821 | 2201653 or<br>2201654 or<br>2201655 or<br>2202843 or<br>2202842 | 2SC3856-O or<br>-Y or<br>-P or<br>2SC5242-O or<br>-R |                   |                                        |                                                  |

## NOTE:

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

## MICROPROCESSOR CONNECTION DIAGRAM

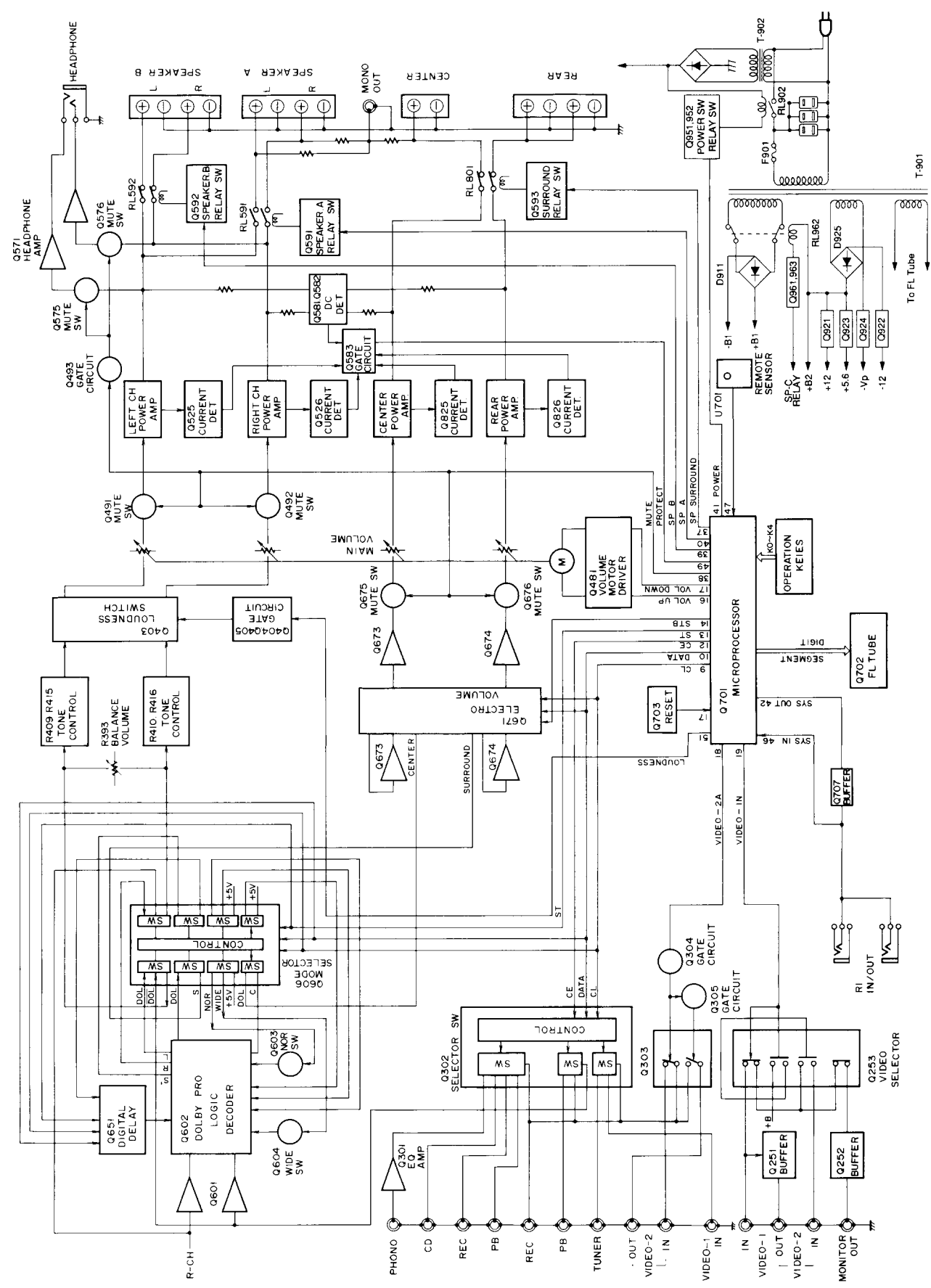


# TERMINAL DESCRIPTIONS

| Pin No. | Function | Description                                                                                                                                         | Pin No. | Function  | Description                                                          |
|---------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|----------------------------------------------------------------------|
| 1 ~ 7   | 7G ~ 1G  | Grid output terminals Active"H"                                                                                                                     | 40      | SPARL     | Control output terminal for speaker relay A                          |
| 8       | VDD      | Positive power supply terminal (+5V)                                                                                                                | 41      | POWER     | Power source control output terminal                                 |
| 9       | CL       | Output terminal for CL-terminal of LC7821N, CK-terminal of TC9162N, CL-terminal of LC72140, CK-terminal of TC9213P and SCK-terminal of M65830P      | 42      | SYSOUT    | System code output terminal                                          |
| 10      | DATA     | Output terminal for DI-terminal of LC7821N, DATA-terminal of TC9162N, DI-terminal of LC72140, DATA-terminal of TC9213P and DATA-terminal of M65830P | 43      | RDSDATA   | Input terminal for DATA OUT-terminal of $\mu$ PC1346CS               |
| 11      | DIN      | Input terminal for DO-terminal of LC72140                                                                                                           | 44      | RDSACK    | Input terminal for SCK-terminal of $\mu$ PC1346CS                    |
| 12      | CE       | Output terminal for CE-terminal of LC7821N and LC72140                                                                                              | 45      | POFF      | Detection input terminal for power failure                           |
| 13      | STB      | Output terminal for ST-terminal of TC9162N, STB-terminal of TC9213P and REQ-terminal of M65830P                                                     | 46      | SYSIN     | System code input terminal                                           |
| 14      | RDSACK   | Input terminal for CLK OUT-terminal of RDS decoder $\mu$ PC1346CS                                                                                   | 47      | REMIN     | Input terminal for signal of remote control                          |
| 15      | VOLUP    | Volume control output terminal                                                                                                                      | 48      | IC        | Internal connection terminal                                         |
| 16      | VOLDOWN  | Refer to table 1                                                                                                                                    | 49      | PROTECT   | Detection input terminal for movement of protection circuit          |
| 17      | RESET    | Input terminal for System Reset                                                                                                                     | 50      | STBY/RECV | STAND-BY and RECEIVED indication output terminal                     |
| 18      | VIDEO-2A | Output terminal for changing Audio Signal of VIDEO-2                                                                                                | 51      | LOUD      | Control output terminal for Loudness switch                          |
| 19      | VIDEO-1V | Output terminal for changing Visual Signal of VIDEO-1                                                                                               | 52      | VDD       | Positive power supply terminal (+5V)                                 |
| 20      | AVSS     | Grand terminal for A/D converter                                                                                                                    | 53      | STEREO    | Detection input terminal for stereo broadcasting                     |
| 21      | MODE2    | Initial setting Input terminal for changing AM stereo function                                                                                      | 54      | SD        | Detection input terminal for radio station                           |
| 22      | AREA     | Initial setting(BAND0,BAND1,AM10K) input terminal for changing frequency range                                                                      | 55      | RDSSIG    | Detection input terminal for RDS broadcasting                        |
| 23      | MODE     | Initial setting input terminal for surround function                                                                                                | 56      | RFIN      | RF MODE input terminal                                               |
| 24      | K4       | Key input terminal.                                                                                                                                 | 57 ~ 70 | Pv ~ Pe   | Segment output terminals Active"H"                                   |
| 25      | K3       | Key input terminal.                                                                                                                                 | 71      | VLOAD     | Pull-down resistor connection terminal for control and driver of FIP |
| 26      | K2       | Key input terminal.                                                                                                                                 | 72 ~ 75 | Pd ~ Pa   | Segment output terminals Active"H"                                   |
| 27      | K1       | Key input terminal.                                                                                                                                 | 76 ~ 80 | 12G ~ 8G  | Grid output terminals Active"H"                                      |
| 28      | K0       | Key input terminal.                                                                                                                                 |         |           |                                                                      |
| 29      | AVDD     | Analog positive power terminal (+5V) for A/D converter                                                                                              |         |           |                                                                      |
| 30      | AVREF    | Reference voltage input terminal for A/D converter                                                                                                  |         |           |                                                                      |
| 31      | XT1      | Crystal connection terminal for resonator of sub system clock                                                                                       |         |           |                                                                      |
| 32      | XT2      | Not used.                                                                                                                                           |         |           |                                                                      |
| 33      | VSS      | Ground Terminal                                                                                                                                     |         |           |                                                                      |
| 34      | X1       | Connect the ceramic resonator 4.19MHz.                                                                                                              |         |           |                                                                      |
| 35      | X2       | Resonator connection terminal for resonator of main system clock                                                                                    |         |           |                                                                      |
| 36      | TUMUT    | Muting output terminal for tuner                                                                                                                    |         |           |                                                                      |
| 37      | SURMUT   | Muting output terminal for center and rear amplifiers                                                                                               |         |           |                                                                      |
| 38      | FRONTMUT | Muting output terminal for front amplifier                                                                                                          |         |           |                                                                      |
| 39      | SPBRL    | Control output terminal for speaker relay B                                                                                                         |         |           |                                                                      |

| Movement  | Outputs    |              |
|-----------|------------|--------------|
|           | VOLUP(#15) | VOLDOWN(#16) |
| Stop      | H          | H            |
| UP        | H          | L            |
| DOWN      | L          | H            |
| POWER OFF | L          | L            |

# BLOCK DIAGRAM



# PRINTED CIRCUIT BOARD PARTS LIST

## CIRCUIT NO. PART NO. DESCRIPTION

PC BOARD ASS'Y (NAAR-5139-1)

IC, Transistors

|                               |                                                     |                                                           |
|-------------------------------|-----------------------------------------------------|-----------------------------------------------------------|
| Q301                          | 222502                                              | NJM4558D-X                                                |
| Q302                          | 22240280Y                                           | LC7821N                                                   |
| Q303                          | 22240025Y                                           | LC4966                                                    |
| Q304                          | 2213510Y or<br>2214350Y                             | DTA114ES or<br>RN2202                                     |
| Q305                          | 221282Y or<br>2213560Y                              | DTC144ES or<br>RN1204                                     |
| Q401,402                      | 22240293                                            | NJM4558L-D                                                |
| Q403                          | 22240025Y                                           | LC4966                                                    |
| Q404                          | 2213510Y or<br>2214350Y                             | DTA114ES or<br>RN2202                                     |
| Q405                          | 221282Y or<br>2213560Y                              | DTC144ES or<br>RN1204                                     |
| Q481                          | 22240239                                            | TA7291S                                                   |
| Q491,492                      | 2213631Y or<br>2213632Y                             | RN1241-A or<br>RN1241-B                                   |
| Q493                          | 2213510Y or<br>2214350Y                             | DTA114ES or<br>RN2202                                     |
| Q501,502,503,<br>Q504,507,508 | 2211733 or<br>2211732 or<br>2211733Y or<br>2211732Y | 2SC1845-E or<br>2SC1845-F or<br>2SC1845-E or<br>2SC1845-F |
| Q505,506                      | 2213354Y or<br>2212125Y                             | 2SA933S-R or<br>2SA1048-GR                                |
| Q509,510                      | 2213284Y or<br>2212115Y                             | 2SC1740S-R or<br>2SC2458-GR                               |
| Q511,512                      | 2211353Y or<br>2211354Y                             | 2SA949-O or<br>2SA949-Y                                   |
| Q513,514                      | 2211633Y or<br>2211634Y                             | 2SC2229-O or<br>2SC2229-Y                                 |
| Q515,516                      | 2213284Y or<br>2212115Y                             | 2SC1740S-R or<br>2SC2458-GR                               |
| Q517,518                      | 2203010                                             | 2SC5171                                                   |
| Q519,520                      | 2203000                                             | 2SA1930                                                   |
| Q525,526                      | 2211633Y or<br>2211634Y                             | 2SC2229-O or<br>2SC2229-Y                                 |
| Q571                          | 22240752                                            | NJM4556L                                                  |
| Q572                          | 221282Y or<br>2213560Y                              | DTC144ES or<br>RN1204                                     |
| Q573                          | 2211163Y or<br>2211164Y                             | 2SC2120-O or<br>2SC2120-Y                                 |
| Q575,576                      | 2213631Y or<br>2213632Y                             | RN1241-A or<br>RN1241-B                                   |
| Q581,582                      | 2211733 or<br>2211732 or<br>2211733Y or<br>2211732Y | 2SC1845-E or<br>2SC1845-F or<br>2SC1845-E or<br>2SC1845-F |
| Q583                          | 2211792 or<br>2211793 or<br>2211792Y or<br>2211793Y | 2SA992-F or<br>2SA992-E or<br>2SA992-F or<br>2SA992-E     |
| Q591,592,593                  | 2213640Y or<br>2214660Y                             | DTC123JS or<br>RN1205                                     |
| Q921                          | 222780125NEC                                        | 78M12HF                                                   |
| Q922                          | 222790125                                           | 79M12HF                                                   |
| Q923                          | 222780565JRC                                        | 78M56                                                     |
| Q924                          | 2211455Y                                            | 2SA1015-GR                                                |

## CIRCUIT NO. PART NO. DESCRIPTION

Diodes

|                                        |                                    |                                   |
|----------------------------------------|------------------------------------|-----------------------------------|
| D491,505,506,<br>D571,572,<br>D591,592 | 223205Y or<br>223163Y or<br>223222 | 1SS270A or<br>1SS133 or<br>WG713A |
| D911                                   | 22380038                           | RBV602                            |
| D925                                   | 22380048                           | RBA402                            |
| D926-928                               | 22380035 or<br>22380046            | GP104003E or<br>AM01Z             |
| D929                                   | 224453304Y                         | MTZ33D, Zener                     |
| D930,931                               | 223205Y or<br>223163Y or<br>223222 | 1SS270A or<br>1SS133 or<br>WG713A |

Coils

|          |          |        |
|----------|----------|--------|
| L501,502 | 231176SY | S-1.3C |
|----------|----------|--------|

Capacitors

|                                         |            |                  |
|-----------------------------------------|------------|------------------|
| C303,304                                | 354741009Y | 10/16V, Elect.   |
| C307,308                                | 354721019Y | 100/6.3V, Elect. |
| C309,310                                | 374726224Y | 622J/50V, TF     |
| C311,312                                | 374721824Y | 182J/50V, TF     |
| C313-316,<br>C401,402,<br>C407-410,C412 | 354741009Y | 10/16V, Elect.   |
| C413,414,<br>C417,418                   | 374721534Y | 153J/50V, TF     |
| C421,422                                | 374724734Y | 473J/50V, TF     |
| C481                                    | 354721019Y | 100/6.3V, Elect. |
| C491,501,502                            | 354741009Y | 10/16V, Elect.   |
| C507,508                                | 354742219Y | 220/16V, Elect.  |
| C513,514                                | 354722219Y | 220/6.3V, Elect. |
| C521,522                                | 354772209Y | 22/63V, Elect.   |
| C527,528                                | 374724734Y | 473J/50V, TF     |
| C539,540                                | 354741019Y | 100/16V, Elect.  |
| C541,542                                | 354764709Y | 47/35V, Elect.   |
| C567,568,570                            | 354700109Y | 1/160V, Elect.   |
| C571,572,573                            | 354741009Y | 10/16V, Elect.   |
| C581                                    | 354721019Y | 100/6.3V, Elect. |
| C915,916                                | 3504278    | 8200/71V, Elect. |
| C923                                    | 3504213    | 4700/35V, Elect. |
| C924                                    | 354763329  | 3300/35V, Elect. |
| C927,928,931                            | 354741009Y | 10/16V, Elect.   |
| C932,933                                | 354761019Y | 100/35V, Elect.  |
| C937,938                                | 354741009Y | 10/16V, Elect.   |

Resistors

|                       |            |                              |
|-----------------------|------------|------------------------------|
| R393                  | 5104225Y   | N11RGLC250KWT22Z, Semi-Fixed |
| R409,415              | 5104230Y   | N14RLC100KWT22Z, Semi-Fixed  |
| R533,544              | 443522704Y | 27, 1/2W, Metal O.           |
| R535,536,<br>R543,544 | 443521014Y | 100, 1/2W, Metal O.          |
| R545,546              | 4000132Y   | 0.22, K, Metal Plate         |
| R551,552              | 453630824Y | 8.2, 1W, Metal               |
| R553,554              | 443523924Y | 3.9K, 1/2W, Metal O.         |
| R567,568,570          | 453530224Y | 2.2, 1/2W, Metal             |
| R923                  | 453530224Y | 2.2, 1/2W, Metal             |
| R924                  | 453530824Y | 8.2, 1/2W, Metal             |
| R927,930              | 443522204Y | 22, 1/2W, Metal O.           |
| R933                  | 443524704Y | 47, 1/2W, Metal O.           |
| R934                  | 453530564Y | 5.6, 1/2W, Metal             |

Relays

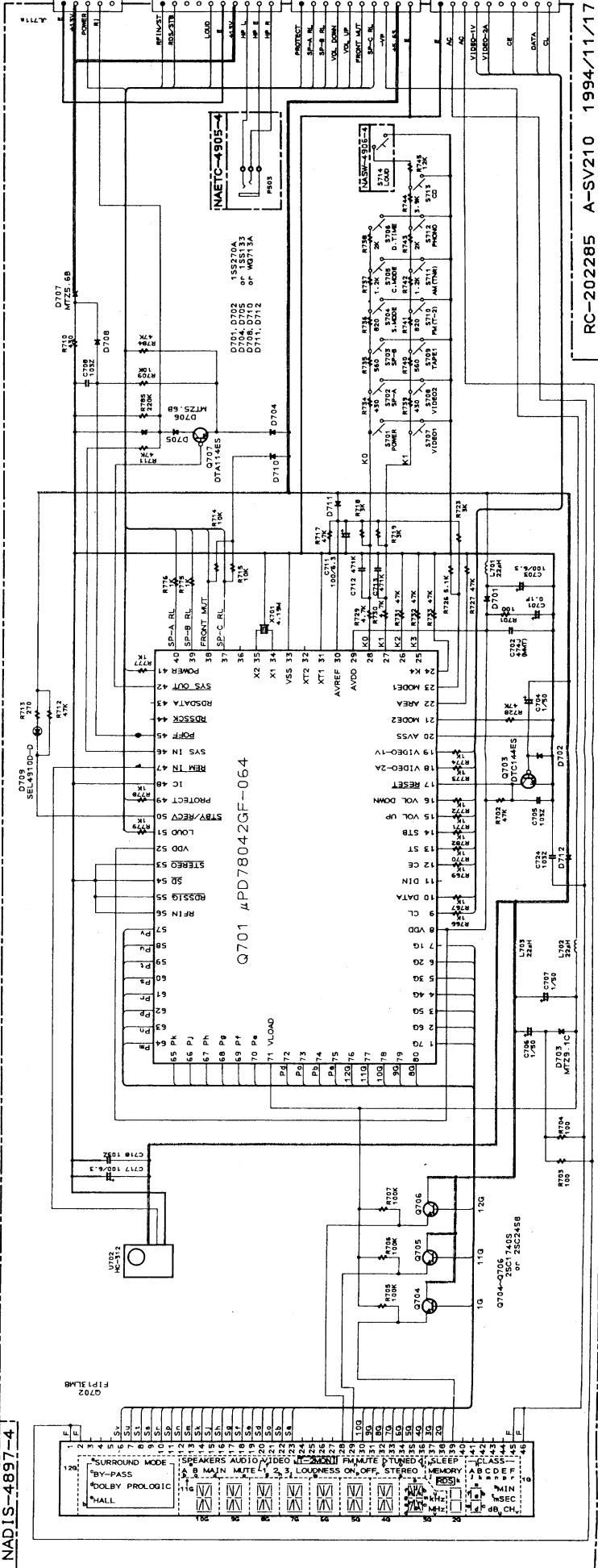
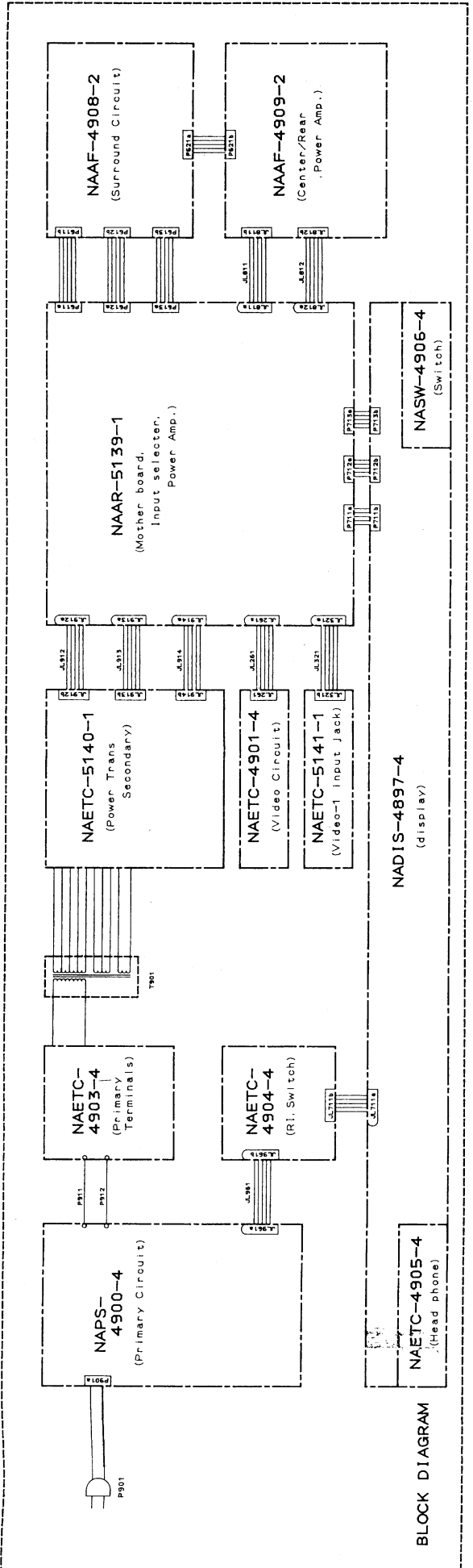
|           |          |                   |
|-----------|----------|-------------------|
| RL591,592 | 25065339 | NRL-2P5A-DC24-046 |
|-----------|----------|-------------------|

| CIRCUIT NO.                   | PART NO.        | DESCRIPTION              | CIRCUIT NO.                  | PART NO.         | DESCRIPTION                 |
|-------------------------------|-----------------|--------------------------|------------------------------|------------------|-----------------------------|
| Jacks, Sockets, Terminals     |                 |                          | C630                         | 374724734Y       | 473J/50V, TF                |
| P301,302,303                  | 25045435Y       | NPJ-6PDBL-259            | C632                         | 354780229Y       | 2.2/50V, Elect.             |
| P611a                         | 25055678Y       | NPLG-8P634               | C634                         | 354722219Y       | 220/6.3V, Elect.            |
| P711a,712a,                   | 25051046Y       | NSCT-10P833              | C635                         | 354741019Y       | 100/16V, Elect.             |
| P713a                         |                 |                          | C636-641,                    | 354741009Y       | 10/16V, Elect.              |
| JL261a                        | 25051088        | NSCT-4P875               | C643                         |                  |                             |
| JL321a                        | 25051087        | NSCT-3P874               | C644                         | 392841007Y       | 10/16V, LL                  |
| JL811a,812a                   | 25051111        | NSCT-7P898               | C651                         | 354780229Y       | 2.2/50V, Elect.             |
| JL912a,913a                   | 25051109        | NSCT-5P896               | C653                         | 374723924Y       | 392J/50V, TF                |
| JL914a                        | 25051087        | NSCT-3P874               | C655                         | 374726834Y       | 683J/50V, TF                |
| P501                          | 25060158Y or    | NM-8PDML-084 or          | C656                         | 354744709Y       | 47/16V, Elect.              |
|                               | 25060224Y       | NM-8PDML-146             | C657,658                     | 354781099Y       | 0.1/50V, Elect.             |
| P504                          | 25045436Y or    | NPJ-1PDBL-260 or         | C659                         | 374726834Y       | 683J/50V, TF                |
|                               | 25045302Y       | NPJ-1PDBL-161            | C660                         | 374725624Y       | 562J/50V, TF                |
| PC BOARD ASS'Y (NAETC-5140-1) |                 |                          | C661                         | 374724724Y       | 472J/50V, TF                |
| Q961                          | 2213640Y or     | DTC123JS or              | C663,665                     | 354721019Y       | 100/6.3V, Elect.            |
|                               | 2214660Y        | RN1205                   | C666                         | 375524744Y       | 474J/50V, MMT               |
| Q963                          | 221282Y or      | DTC144ES or              | C671,672                     | 354780229Y       | 2.2/50V, Elect.             |
|                               | 2213560Y        | RN1204                   | C675,676                     | 354741009Y       | 10/16V, Elect.              |
| D963                          | 223205Y or      | ISS270A or               | C677,678                     | 354780229Y       | 2.2/50V, Elect.             |
|                               | 223163Y or      | ISS133 or                | C679-682,                    | 354741009Y       | 10/16V, Elect.              |
|                               | 223222          | WG713A                   | C684,685                     |                  |                             |
| F921a,F922a                   | 25050065Y       | YSH403T, Fuse Holder     |                              | Resistor         |                             |
| RL904                         | 25065496Y       | NRL-2P5A-DC12-089, Relay | R431                         | 5104347Y         | N16RQL100KBT25F, Semi-Fixed |
| PC BOARD ASS'Y (NAETC-5141-1) |                 |                          |                              | Plug, Sockets    |                             |
| P252                          | 25045437Y or    | NPJ-2PDWH261 or          | P611b                        | 25051127Y        | NSCT-8P914, Socket          |
|                               | 25045360Y       | NPJ-2PDWH206             | P612b                        | 25050983Y        | NSCT-8P770, Socket          |
| PC BOARD ASS'Y (NAAF-4908-2)  |                 |                          | P613b                        | 25050986Y        | NSCT-14P773, Socket         |
|                               | IC, Transistors |                          | P621a                        | 2009990233ULY    | NSAS-6P0336, Socket AS      |
| Q601                          | 22240293        | NJM4558L-D               | P622a                        | 25055405Y        | NPLG-3P387, P Plug          |
| Q602                          | 22240683        | NJM2177L or              | PC BOARD ASS'Y (NAAF-4909-2) |                  |                             |
|                               | 22240692        | M69032P                  |                              | ICs, Transistors |                             |
| Q603,604                      | 2213631Y or     | RN1241-A or              | Q801-804,                    | 2211733 or       | 2SC1845-E or                |
|                               | 2213632Y        | RN1241-B                 | Q807,814                     | 2211732 or       | 2SC1845-F or                |
| Q606                          | 22240398 or     | TC9162N or               |                              | 2211733Y or      | 2SC1845-E or                |
|                               | 22240751 or     | NJU7311L or              |                              | 2211732Y         | 2SC1845-F                   |
| Q651                          | 22240686 or     | M65830P or               | Q805,806                     | 2213354Y or      | 2SA933S-R or                |
|                               | 22240687        | NJU9701D                 |                              | 2212125Y         | 2SA1048-GR                  |
| Q671                          | 22240266        | TC9213P                  | Q808-810                     | 2213284Y or      | 2SC1740S-R or               |
| Q673,674                      | 22240293        | NJM4558L-D               |                              | 2212115Y         | 2SC2458-GR                  |
| Q675,676                      | 2213631Y or     | RN1241-A or              | Q811                         | 2211353Y or      | 2SA949-O or                 |
|                               | 2213632Y        | RN1241-B                 |                              | 2211354Y         | 2SA949-Y                    |
|                               | Diodes          |                          | Q812                         | 2211792 or       | 2SA992-F or                 |
| D651                          | 224450562Y      | MTZ5.6B, Zener           |                              | 2211793 or       | 2SA992-E or                 |
| D652,653                      | 223205Y or      | ISS270A or               |                              | 2211792Y or      | 2SA992-F or                 |
|                               | 223163Y or      | ISS133                   |                              | 2211793Y         | 2SA992-E                    |
|                               | 223222          | WG713A                   | Q813                         | 2211633Y or      | 2SC2229-O or                |
|                               | Resonator       |                          |                              | 2211634Y         | 2SC2229-Y                   |
| X651                          | 3010217Y        | CS2.04MG040, Cera Lock   | Q815,816                     | 2213284Y or      | 2SC1740S-R or               |
|                               | Capacitors      |                          |                              | 2212115Y         | 2SC2458-GR                  |
| C601,602                      | 354780229Y      | 2.2/50V, Elect.          | Q817                         | 2203010 or       | 2SC5171 or                  |
| C605,606                      | 354741009Y      | 10/16V, Elect.           | Q818                         | 2211653Y or      | 2SC2235-O or                |
| C607-610                      | 354781099Y      | 0.1/50V, Elect.          |                              | 2211654Y         | 2SC2235-Y                   |
| C613,614                      | 374724734Y      | 473J/50V, TF             | Q819                         | 2203000 or       | 2SA1930 or                  |
| C615,616                      | 374722234Y      | 223J/50V, TF             | Q820                         | 2211643Y or      | 2SA965-O or                 |
| C617-620                      | 354781099Y      | 0.1/50V, Elect.          |                              | 2211644Y         | 2SA965-Y                    |
| C621,622                      | 354780479Y      | 4.7/50V, Elect.          | Q825                         | 2211633Y or      | 2SC2229-O or                |
| C623-627                      | 354782299Y      | 0.22/50V, Elect.         |                              | 2211634Y         | 2SC2229-Y                   |
| C628                          | 354741009Y      | 10/16V, Elect.           | Q826                         | 2211733 or       | 2SC1845-E or                |
| C629                          | 354786899Y      | 0.68/50V, Elect.         |                              | 2211732 or       | 2SC1845-F or                |

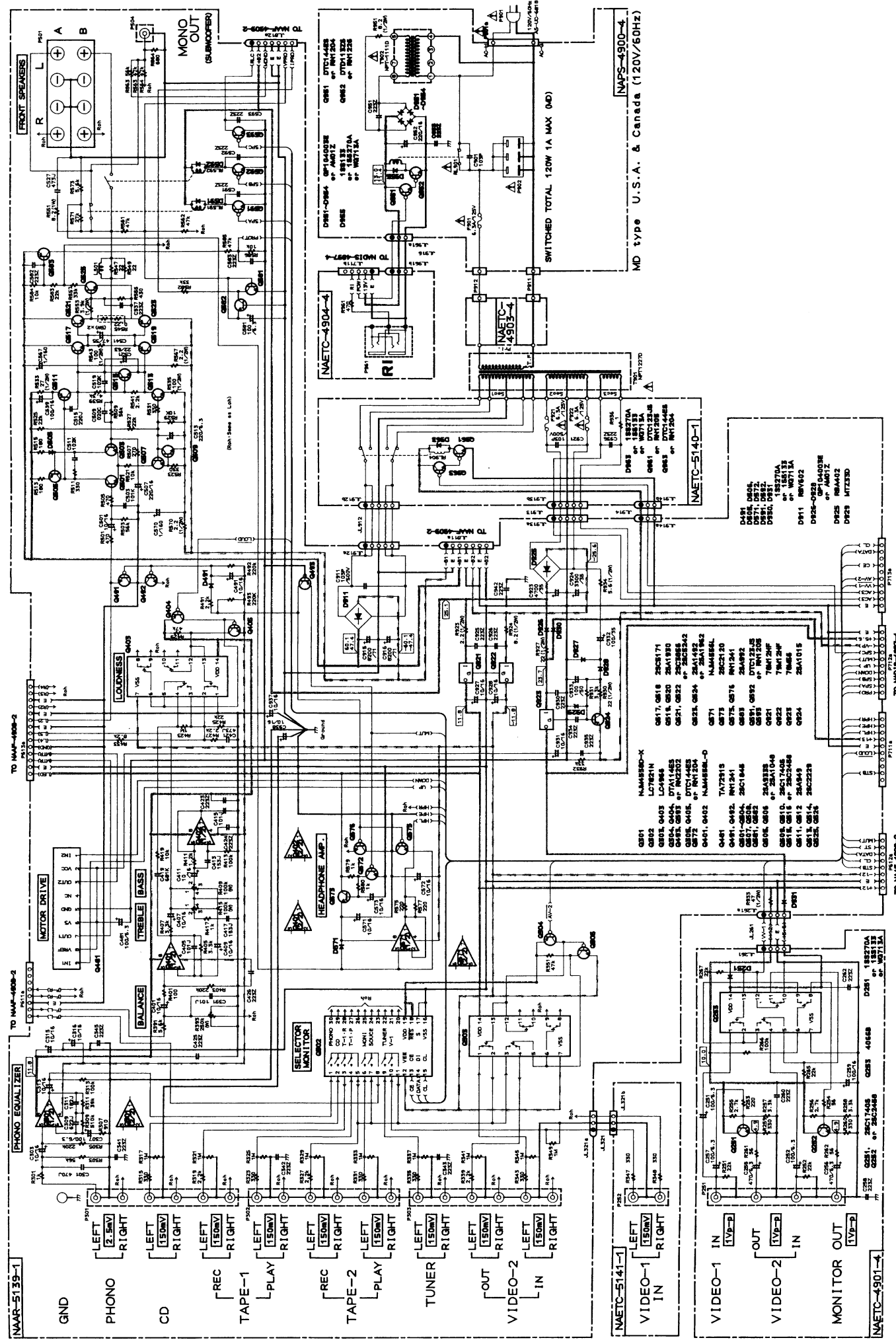
| CIRCUIT NO.                   | PART NO.        | DESCRIPTION              |
|-------------------------------|-----------------|--------------------------|
|                               | 2211733Y or     | 2SC1845-E or             |
|                               | 2211732Y        | 2SC1845-F                |
|                               | Diodes          |                          |
| D805,806,811                  | 223205Y or      | 1SS270A or               |
|                               | 223163Y or      | 1SS133 or                |
|                               | 223222          | WG713A                   |
|                               | Coils           |                          |
| L801,L802                     | 231176SY        | S-1.3C                   |
|                               | Capacitors      |                          |
| C801,802                      | 354741009Y      | 10/16V, Elect.           |
| C807                          | 354742219Y      | 220/16V, Elect.          |
| C808                          | 354744709Y      | 47/16V, Elect.           |
| C821,822,<br>C827,828         | 374724734Y      | 473J/50V, TF             |
| C865-867                      | 354700109Y      | 1/160V, Elect.           |
| C868                          | 374724734Y      | 473J/50V, TF             |
| C869                          | 354700109Y      | 1/160V, Elect.           |
| C870                          | 374724734Y      | 473J/50V, TF             |
|                               | Resistors       |                          |
| R833,834                      | 443522704Y      | 27, 1/2W, Metal O.       |
| R835,836                      | 443521014Y      | 100, 1/2W, Metal O.      |
| R843,844                      | 443523314Y      | 330, 1/2W, Metal O.      |
| R845,846                      | 4000132Y        | 0.22, K, Metal Plate     |
| R851,852                      | 453630824Y      | 8.2, 1W, Metal           |
| R853,854                      | 443523924Y      | 3.9K, 1/2W, Metal O.     |
| R865,866                      | 453530224Y      | 2.2, 1/2W, Metal         |
| R867-870                      | 443522204Y      | 22, 1/2W, Metal O.       |
|                               | Plug,Relay      |                          |
| P621b                         | 25055234Y       | NPLG-3P218, P Plug       |
| RL801                         | 25065485Y       | NRL-2P2A-DC24-086, Relay |
| PC BOARD ASS'Y (NADIS-4897-4) |                 |                          |
| U702                          | 24130010Y       | HC-312, Remote Sensor    |
|                               | ICs,Transistors |                          |
| Q701                          | 22240773        | MPD78042GF-064           |
| Q703                          | 221282Y or      | DTC144ES or              |
|                               | 2213560Y        | RN1204                   |
| Q704,705,706                  | 2213284Y or     | 2SC1740S-R or            |
|                               | 2212115Y        | 2SC2458-GR               |
| Q707                          | 2213510Y or     | DTA114ES or              |
|                               | 2214350Y        | RN2202                   |
|                               | FL Tube         |                          |
| Q702                          | 212127 or       | FIP13LM8                 |
|                               | Diodes          |                          |
| D701,702                      | 223205Y or      | 1SS270A or               |
|                               | 223163Y or      | 1SS133 or                |
|                               | 223222          | WG713A                   |
| D703                          | 224450913Y      | MTZ9.1C, Zener           |
| D704,705                      | 223205Y or      | 1SS270A or               |
|                               | 223163Y or      | 1SS133 or                |
|                               | 223222          | WG713A                   |
| D706,707                      | 224450562Y      | MTZ5.6B, Zener           |
| D708                          | 223205Y or      | 1SS270A or               |
|                               | 223163Y or      | 1SS133 or                |
|                               | 223222          | WG713A                   |
| D709                          | 225291D         | SEL4910D-D, LED          |
| D710,711,712                  | 223205Y or      | 1SS270A or               |
|                               | 223163Y or      | 1SS133 or                |
|                               | 223222          | WG713A                   |
|                               | Coils           |                          |
| L701-703                      | 233454K220Y     | NCH-1452, 220K           |

| CIRCUIT NO.                   | PART NO.        | DESCRIPTION                         |
|-------------------------------|-----------------|-------------------------------------|
|                               | Resonators      |                                     |
| X701                          | 3010163Y        | CS4.19MGW, Cera Lock                |
|                               | Capacitors      |                                     |
| C701                          | 3000076Y        | EECS5R5104, Super C.                |
| C702                          | 375524744Y      | 474J/50V, MMT                       |
| C703                          | 354721019Y      | 100/6.3V, Elect.                    |
| C704,706,707                  | 354780109Y      | 1/50V, Elect.                       |
| C711,717                      | 354721019Y      | 100/6.3V, Elect.                    |
|                               | Others          |                                     |
| S701-713                      | 25035652Y       | NPS-111-S604, Push SW.              |
| P711b,712b,<br>P713b          | 25055659Y       | NPLG-10P615, P Plug                 |
| Q702a                         | 27190937Y       | Holder (FL Tube)                    |
| PC BOARD ASS'Y (NAPS-4900-4)  |                 |                                     |
|                               | ICs,Transistors |                                     |
| Q951                          | 221282Y or      | DTC144ES or                         |
|                               | 2213560Y        | RN1204                              |
| Q952                          | 2213650Y or     | DTD113ZS or                         |
|                               | 2214680Y        | RN1226                              |
|                               | Diodes          |                                     |
| D951-954                      | 22380035 or     | GP104003E or                        |
|                               | 22380046        | AM01Z                               |
| D955                          | 223205Y or      | 1SS270A or                          |
|                               | 223163Y or      | 1SS133 or                           |
|                               | 223222          | WG713A                              |
|                               | Others          |                                     |
| T902                          | 2300670AY       | NP-1111D, Power Transformer         |
| C901                          | 3500065AY       | DE7150FZ103P,<br>AC400V/125V, IS C. |
| R951                          | 453530824Y      | 8.2,1/2W, Metal Resistor            |
| P901a                         | 25055675Y       | NPLG-2P631, P PLUG                  |
| P902                          | 25051124        | NSCT-6P911, AC Outlet               |
| RL901                         | 25065483Y       | NRL-1P5ADC12-084, Relay             |
| F901a                         | 25050065Y       | YSH403T, Fuse holder                |
| PC BOARD ASS'Y (NAETC-4901-4) |                 |                                     |
|                               | IC              |                                     |
| Q253                          | 222840661Y      | 4066B                               |
|                               | Transistors     |                                     |
| Q251,252                      | 2213284Y or     | 2SC1740S-R or                       |
|                               | 2212115Y        | 2SC2458-GR                          |
|                               | Diode           |                                     |
| D251                          | 223205Y or      | 1SS270A or                          |
|                               | 223163Y         | 1SS133 or                           |
|                               | 223222          | WG713A                              |
|                               | Capacitors      |                                     |
| C251,252                      | 354721019Y      | 100/6.3V, Elect.                    |
| C255,255                      | 354724719Y      | 470/6.3V, Elect.                    |
| C258,259                      | 354721019Y      | 100/6.3V, Elect.                    |
|                               | Jacks           |                                     |
| P251                          | 25045438Y or    | NPJ-4PDYE262 or                     |
|                               | 25045339Y       | NPJ-4PDYE190                        |
| PC BOARD ASS'Y (NAETC-4904-4) |                 |                                     |
| P961                          | 25045330        | NPJ-2PDBL184, Jack                  |
| PC BOARD ASS'Y (NAETC-4905-4) |                 |                                     |
| P503                          | 25045255Y       | YKB21-5009, Jack                    |
| PC BOARD ASS'Y (NASW-4906-4)  |                 |                                     |
| S714                          | 25035652Y       | NPS-111-S604, Push SW.              |

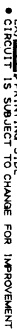
SCHEMATIC DIAGRAM



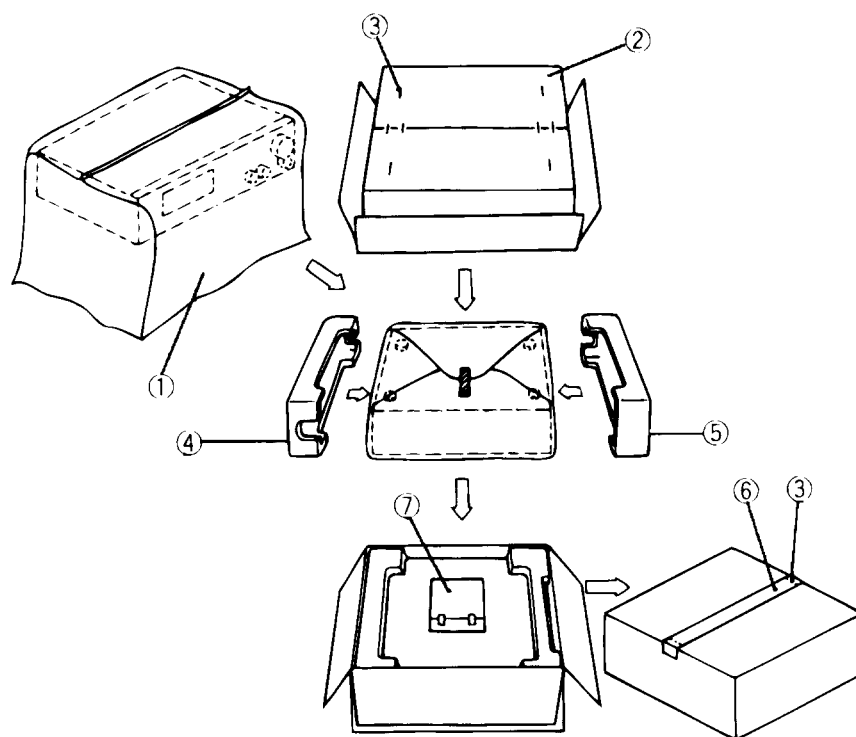
# SCHEMATIC DIAGRAM



TO NOVA-51 35  
PC12b



# PACKING VIEW



| REF. NO. | PART NO.    | DESCRIPTION          |
|----------|-------------|----------------------|
| 1        | 29100034-1Y | Styrene Bag For Unit |
| 2        | 29052827Y   | Master Carton        |
| 3        | 282320      | Ten Staple           |
| 4        | 29091652BY  | Pad(R)               |
| 5        | 29091651BY  | Pad(L)               |
| 6        | 29110071    | PP Tape              |

| REF. NO. | PART NO.            | DESCRIPTION                         |
|----------|---------------------|-------------------------------------|
| 7        | Accessory bag ass'y |                                     |
|          | 24140262Y           | RC-262S, Remote Control Transmitter |
|          | 3010054             | UM-3, 2 x Battery                   |
|          | 29342045Y           | Instruction Manual, English         |
|          | 2010200Y            | 3.5Mini Plug, Cord As               |
|          | 29365019BY          | Warranty Card                       |
|          | 29358002KY          | SS List                             |
|          | 29100097-1Y         | Styrene Bag For Accessory           |
|          | 29360778Y           | Label (FLASH)                       |
|          | 29361777Y           | Label (UPC)                         |