

# ONKYO SERVICE MANUAL

## Integrated Stereo Amplifier MODEL A-RV410

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

### SAFETY-RELATED COMPONENT WARNING!!

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

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



# SPECIFICATIONS

|                                |   |                    |
|--------------------------------|---|--------------------|
| <b>Power Output:</b>           | USA & Canadian models:<br><b>110 watts per channel, min RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.08% THD.</b> |                    |
|                                | Other than USA & Canadian models:<br>Continuous output: 110 W 4 $\Omega$ DIN<br>80 W 8 $\Omega$ DIN   |                    |
| Total Harmonic Distortion      | 0.08% at rated power  |                    |
| IM Distortion                  | 0.08% at rated power  |                    |
| Damping Factor:                | 50 at 8 ohms  |                    |
| Frequency and Response:        | 15 - 30,000 Hz $\pm$ 1 dB   |                    |
| Sensitivity and Impedance      | Phono:  | 2.5 mV/50 kohms    |
|                                | Tuner/CD/VCR-1, VDP:  | 150 mV/50 kohms    |
|                                | Tape/VCR-2 Play:  | 150 mV/50 kohms    |
|                                | Tape/VCR-2 Rec:   | 150 mV/2.2 kohms   |
| Phono Overload:                | 120 mV RMS. at 1 kHz, 0.5% THD  |                    |
| Bass Control:                  | $\pm$ 10 dB at 100 Hz   |                    |
| Treble Control:                | $\pm$ 10 dB at 10,000 Hz  |                    |
| Signal to Noise Ratio (IHF-A): | Phono:  | 80 dB (5 mV input) |
|                                | CD/Tape:  | 100 dB             |

## General

|   |   |                                    |
|---|---|------------------------------------|
| Power Supply:                             | USA & Canadian models:  | AC 120 V, 60 Hz                    |
|   | European models:  | AC 230 V, 50 Hz                    |
|   | UK & Australian models:   | AC 240 V, 50 Hz                    |
|   | Worldwide models:   | 220 and 120 V switchable, 50/60 Hz |
| Dimensions (W) $\times$ (H) $\times$ (D): | 455 $\times$ 150 $\times$ 331 mm<br>17-15/16" $\times$ 5-7/8" $\times$ 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 dernier est indique la qu le present symbol est appose.

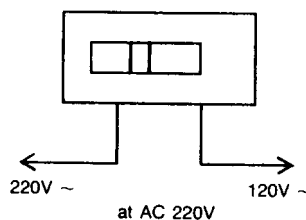
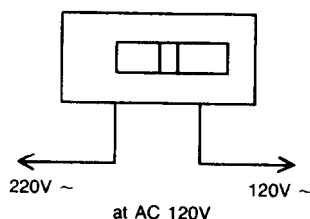
| CIRCUIT NO. | PART NO.              | DESCRIPTION  |
|-------------|-----------------------|--|
| F901        | 252052                | 7A ST-6  |
| F902        | 252076 or<br>252076CC | 3.15A-SE-EAK or<br>3.15A-SE-EAK Primary fuse (230V, 240V, 120V/220V model) |
| F903        | 252075 or<br>252075CC | 2.5A-SE-EAK or<br>2.5A-SE-EAK, Primary fuse (230V model)                   |

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

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

### 3. Voltage selector (rear panel)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before plugging in the unit. Voltage is changed by sliding the groove in the switch with a screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before plugging in the unit. Models without a voltage selector can only be used in areas where the power supply is the same as that of the unit.



## ADJUSTMENT PROCEDURES

### Adjustments and Checking the Protection Circuitry

#### 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

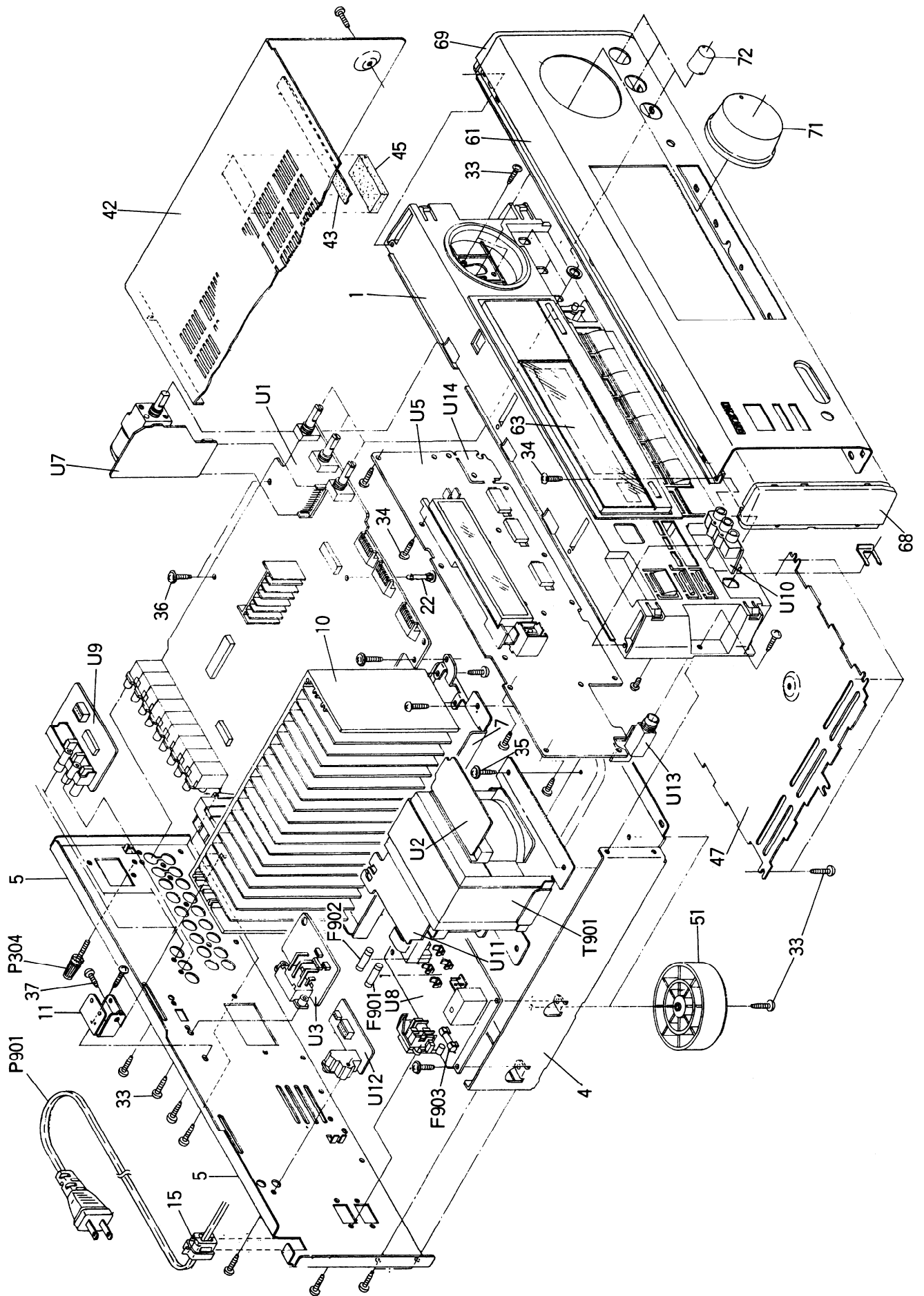
Note) Check the following points before making adjustments

- (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.
  - (1) Adjust R537 (R538) so that the voltage at test point P521 (P522) on the NAAR-4892-2 circuit board is  $7.5\text{mV} \pm 0.5\text{mV}$

CHASSIS-EXPLODED VIEW

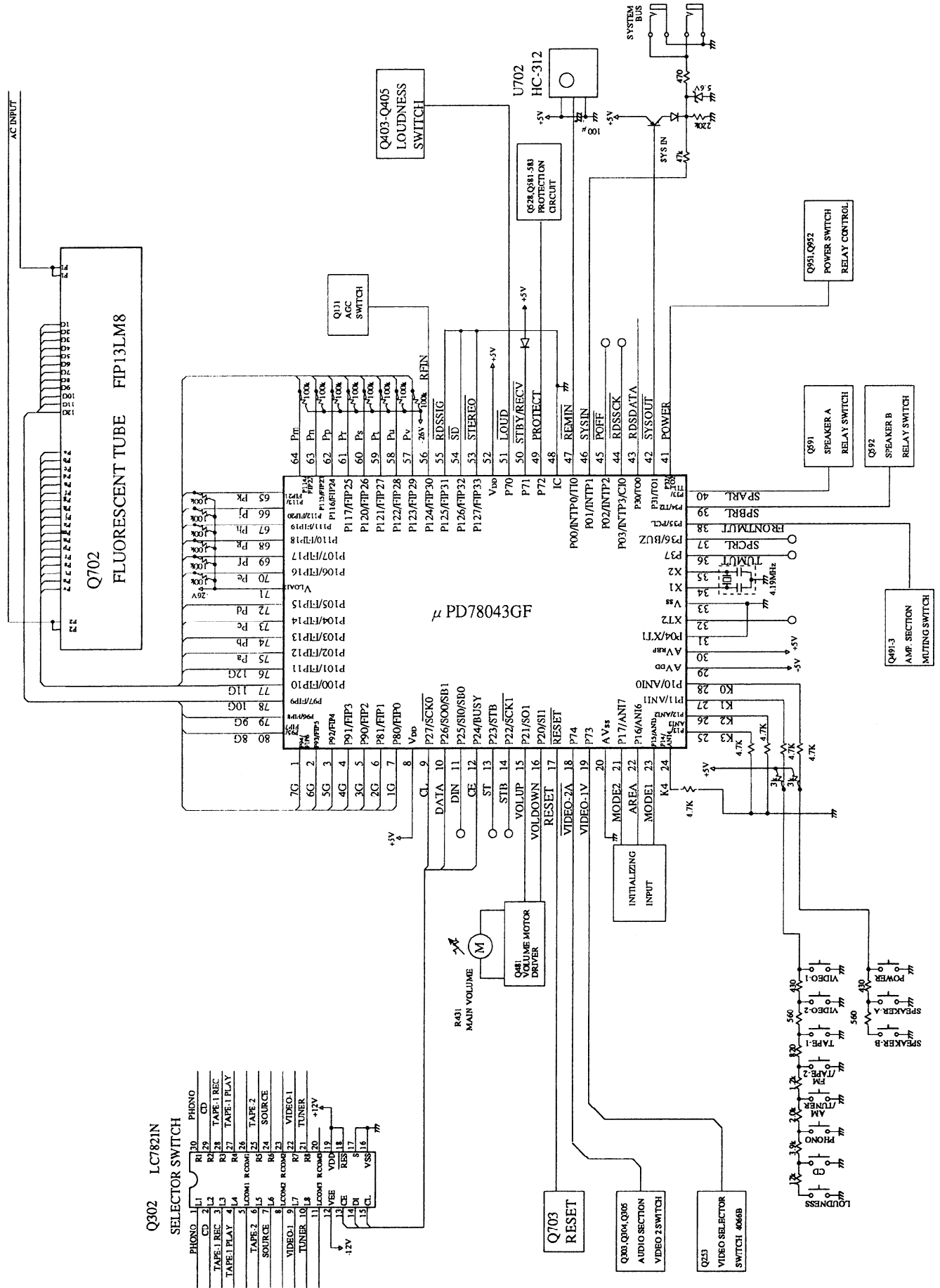


## PARTS LIST

| REF. NO. | PART NO.   | DESCRIPTION                         | REF. NO.   | PART NO.     | DESCRIPTION   |
|----------|------------|-------------------------------------|------------|--------------|---|
| 1        | 27110793Y  | Front bracket                       |            | 253092-1A    | Power supply cord <W>                                       |
| 3        | 28175209AY | Isolating plate                     | Q521, Q522 | 2201653,     | 2SC3856-O,  |
| 4        | 27100278AY | Chassis                             |            | 2201654 or   | 2SC3856-Y or  |
| 5        | 27121821AY | Rear panel <D>                      |            | 2201655      | 2SC3856-P, Transistors                                      |
|          | 27121822AY | Rear panel <P>                      | Q523, Q524 | 2201663,     | 2SA1492-O,  |
|          | 27121824AY | Rear panel <W>                      |            | 2201664 or   | 2SA1492-Y or  |
| 6        | 27267838Y  | Guide, Video                        |            | 2201665      | 2SA1492-P, Transistors                                      |
| 7        | 27130727Y  | Bracket H                           | T901       | 2300979AY    | △ NPT-1198D, Power transformer <D>                          |
| 8        | 27270212Y  | Spacer <W>                          |            | 2300980Y     | △ NPT-1195P, Power transformer <P>                          |
| 10       | 27160330AY | Radiator                            |            | 2300981Y     | △ NPT-1195DG, Power transformer <W>                         |
| 11       | 27141623Y  | Retainer H                          | U1         | 1A470592-2Y  | NAAR-4892-2, Main circuit pc board ass'y <D>                |
| 15       | 27300750   | Bushing cord                        |            | 1A470592-2AY | NAAR-4892-2A, Main circuit pc board ass'y <P>, <W>          |
| 22       | 27190524   | KGLS-14RF, Holder                   | U2         | 1A470593-2Y  | NAETC-4893-2, Power supply circuit pc board ass'y <D>       |
| 32       | 801433     | 3SMS8W, SW+14B(BC), Special screw   | U3         | 1A470593-2AY | NAETC-4893-2A, Power supply circuit pc board ass'y <P>, <W> |
| 33       | 834430088  | 3TTS+8B(BC), Self-tapping screw     | U5         | 1A470594-2Y  | NASW-4894-2, Switch pc board ass'y <D>                      |
| 34       | 833430080  | 3TTP+8P(BC), Self-tapping screw     |            | 1A470597-2Y  | NADIS-4897-2, Display circuit pc board ass'y <D>            |
| 35       | 830440089  | 4TTC+8B(BC), Self-tapping screw     | U7         | 1A470597-2BY | NADIS-4897-2B, Display circuit pc board ass'y <W>           |
| 36       | 831130088  | 3TTW+8B, Self-tapping screw         | U8         | 1A470599-2Y  | NAAF-4899-2, Volume circuit pc board ass'y                  |
| 37       | 834430108  | 3TTS+10B(BC), Self-tapping screw    |            | 1A470500-2Y  | NAPS-4900-2, Power supply circuit pc board ass'y <D>        |
| 42       | 28184476BY | Top cover                           |            | 1A470500-2AY | NAPS-4900-2A, Power supply circuit pc board ass'y <P>       |
| 46       | 28140546   | Cushion                             | U9         | 1A470500-2BY | NAPS-4900-2B, Power supply circuit pc board ass'y <W>       |
| 47       | 27170302Y  | Bottom panel                        | U10        | 1A470501-2Y  | NAETC-4901-2, Video circuit pc board ass'y                  |
| 51       | 27175251AY | Leg                                 |            | 1A470502-2Y  | NAETC-4902-2, Video terminal pc board ass'y <P>, <W>        |
| 61       | 1A470121Y  | Front panel ass'y                   | U11        | 1A470502-2AY | NAETC-4902-2A, Video terminal pc board ass'y <P>, <W>       |
| 62       | 8910301    | CS-3, Ring CS                       | U12        | 1A470503-2Y  | NAETC-4903-2, Primary circuit pc board ass'y                |
| 63       | 2819167AY  | Clear plate                         |            | 1A470504-2Y  | NAETC-4904-2, RI terminal pc board ass'y <D>                |
| 64       | 28198782Y  | Facet                               | U13        | 1A470504-2BY | NAETC-4904-2B, RI terminal pc board ass'y <W>               |
| 67       | 28135199   | Badge                               | U14        | 1A470505-2Y  | NAETC-4905-2, Headphone terminal pc board ass'y             |
| 68       | 28125255A  | End cap L                           |            | 1A470506-2Y  | NASW-4906-2, Loudness switch pc board ass'y                 |
| 69       | 28125256A  | End cap R                           |            |              |   |
| 71       | 28324933B  | Knob VOLUME                         |            |              |   |
| 72       | 28324845B  | Knob LEVEL                          |            |              |   |
| F901     | 252166Y    | △ 6.3A-UL/T237, Fuse                |            |              |   |
| F902     | 252076     | △ 3.15A-SE-EAK, Fuse <P>, <W>       |            |              |   |
| F903     | 252075     | △ 2.5A-SE-EAK <P>                   |            |              |   |
| P304     | 25060044   | Terminal                            |            |              |   |
| P901     | 253192HIT  | △ AS-UC-6#18, Power supply cord <D> |            |              |   |
|          | 253193HIT  | △ AS-CEE <P>                        |            |              |   |
|          | 253172 or  | △ AS-CEE-2,                         |            |              |   |

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

# MICROPROCESSOR CONNECTION DIAGRAM



# TERMINAL DESCRIPTIONS

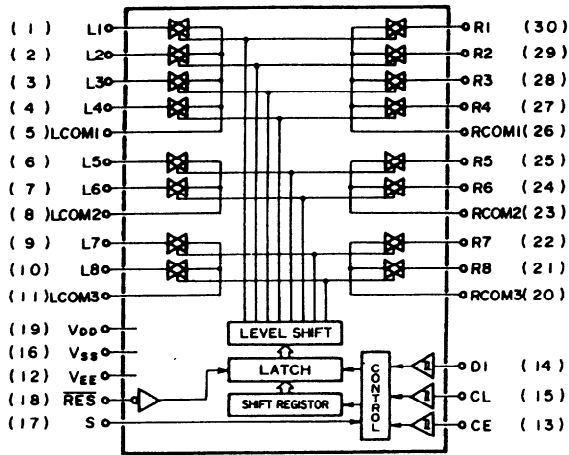
| Pin No. | Function | Description   |
|---------|----------|---|
| 1~7     | 7G~1G    | Grid output terminals Active"H"   |
| 8       | VDD      | Positive power supply terminal (+5V)  |
| 9       | CL       | Output terminal for CL-terminal of LC7821N, CK-terminal of TC9162N, CL-terminal of LC72140, CK-terminal of TC9213P and SK-terminal of M65830P       |
| 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 |
| 11      | DIN      | Input terminal for DO-terminal of LC72140   |
| 12      | CE       | Output terminal for CE-terminal of LC7821N and LC72140  |
| 13      | STB      | Output terminal for ST-terminal of TC9162N, STB-terminal of TC9213P and REQ-terminal of M65830P.  |
| 14      | RDSSCK   | Input terminal for CLK OUT-terminal of RDS decoder $\mu$ PC1346CS   |
| 15      | VOLUP    | Volume control output terminal  |
| 16      | VOLDOWN  | Refer to table 1  |
| 17      | RESET    | Input terminal for System Reset   |
| 18      | VIDEO-2A | Output terminal for changing Audio Signal of VIDEO-2  |
| 19      | VIDEO-IV | Output terminal for changing Visual Signal of VIDEO-I   |
| 20      | AVSS     | Grand terminal for A/D converter  |
| 21      | MODE2    | Initial setting input terminal for changing AM stereo function  |
| 22      | AREA     | Initial setting(BAND0,BAND1,AM10K) input terminal for changing frequency range  |
| 23      | MODE     | Initial setting input terminal for surround function  |
| 24      | K4       | Key input terminal.   |
| 25      | K3       | Key input terminal.   |
| 26      | K2       | Key input terminal.   |
| 27      | K1       | Key input terminal.   |
| 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   |

| Pin No. | Function  | Description  |
|---------|-----------|--|
| 40      | SPARL     | Control output terminal for speaker relay A                          |
| 41      | POWER     | Power source control output terminal                                 |
| 42      | YSOOUT    | System code output terminal  |
| 43      | RDSSDATA  | Input terminal for DATA OUT-terminal of $\mu$ PC1346CS               |
| 44      | RDSSCK    | Input terminal for SK-terminal of $\mu$ PC1346CS                     |
| 45      | POFF      | Detection input terminal for power failure                           |
| 46      | SYSIN     | System code input terminal   |
| 47      | REMIN     | Input terminal for signal of remote control                          |
| 48      | IC        | Internal connection terminal   |
| 49      | PROTECT   | Detection input terminal for movement of protection circuit          |
| 50      | STBY/RECV | STAND-BY and RECEIVED indication output terminal                     |
| 51      | LOUD      | Control output terminal for Loudness switch                          |
| 52      | VDD       | Positive power supply terminal (+5V)                                 |
| 53      | STEREO    | Detection input terminal for stereo broadcasting                     |
| 54      | SD        | Detection input terminal for radio station                           |
| 55      | RDSSIG    | Detection input terminal for RDS broadcasting                        |
| 56      | RFIN      | RF-MODE input terminal   |
| 57~70   | Pv~Pe     | Segment output terminals Active"H"                                   |
| 71      | VLOAD     | Pull-down resistor connection terminal for control and driver of FIP |
| 72~75   | Pd~Pa     | Segment output terminals Active"H"                                   |
| 76~80   | 12G~8G    | Grid output terminals Active"H"                                      |

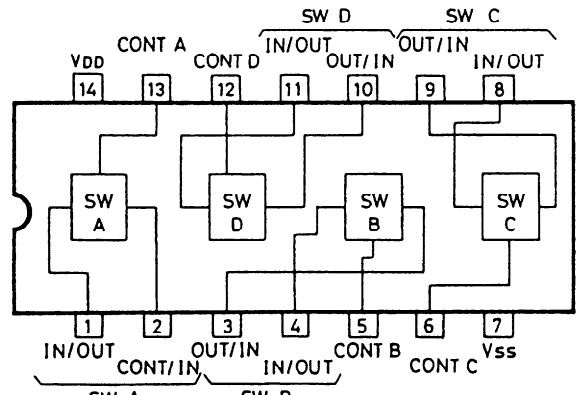
| Outputs   |                         |
|-----------|-------------------------|
| Movement  | VOLUP(#15) VOLDOWN(#16) |
| Stop      | H H                     |
| UP        | H L                     |
| DOWN      | L H                     |
| POWER OFF | L L                     |

# IC BLOCK DIAGRAM

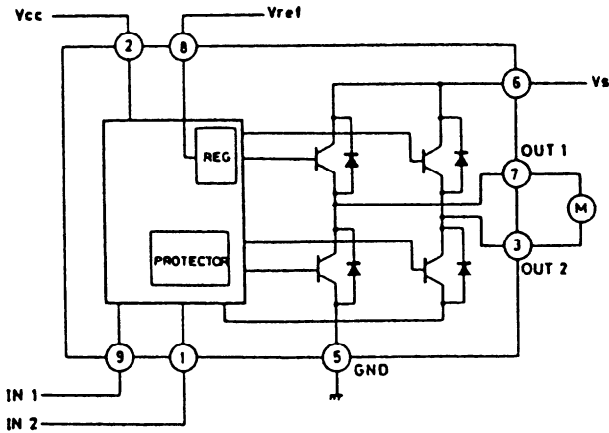
**LC7821N (Analog switch)**



**LC4966 (Switch) 4066B**



**TA7291S (Volume driver)**

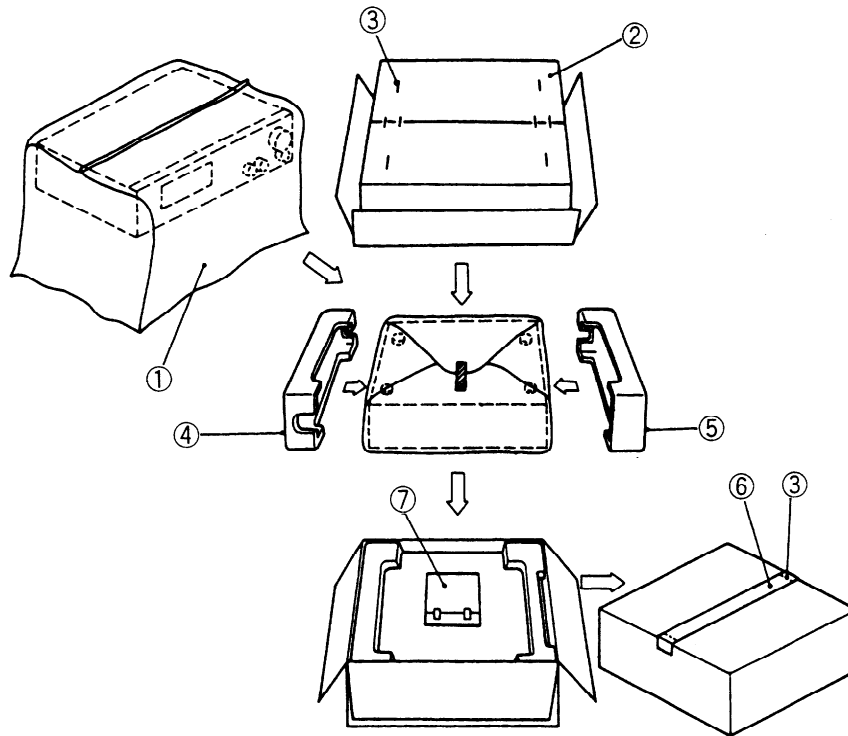


| INPUT |      | OUTPUT |       | MODE   |
|-------|------|--------|-------|--------|
| IN 1  | IN 2 | OUT 1  | OUT 2 |        |
| 0     | 0    | ∞      | ∞     | STOP   |
| 1     | 0    | H      | L     | CW/CCW |
| 0     | 1    | L      | H     | CCW/CW |
| 1     | 1    | L      | L     | BRAKE  |

CCW: Counter clockwise direction  
 CW: Clockwise direction



# PACKING VIEW



| REF.NO. | PART NO.            | DESCRIPTION                        |
|---------|---------------------|------------------------------------|
| 1       | 29100034-1Y         | Styrene bag for unit               |
| 2       | 29052694Y           | Carton box                         |
| 3       | 282320              | Ten staples                        |
| 4       | 29091652BY          | Pad R                              |
| 5       | 29091651BY          | Pad L                              |
| 6       | 29110071            | PP tape                            |
| 7       | Accessory bag ass'y |                                    |
|         | 2010200             | Cord ass'y                         |
|         | 3010054             | UM-3,Two batteries                 |
|         | 25055018            | CV-K-1,Conversion plug <W>         |
|         | 24140261Y           | RC-261S,Remote control transmitter |
|         | 29100097-1Y         | Styrene bag for accessory          |
|         | 29100094B           | Styrene bag for accessory <V>      |
|         | 29341905BY          | Instruction manual                 |
|         | 29341908BY          | Instruction manual<P>              |
|         | 29341907Y           | Instruction manual <C/W>           |
|         | 29355211Y           | Instruction Sheet                  |
|         | 29355133AY          | Instruction Sheet<V>               |
|         | 29358002J           | Service station list <N>           |
|         | 29361679Y           | Label UPC <N>                      |
|         | 29365019A           | Warranty card <N>                  |
|         | 29365020H           | Warranty card <V>                  |

NOTE: <D>:120V model only  
 <W>:Worldwide model only  
 <N>:USA model only  
 <C>:Canadian model only  
 <P> 220V model only  
 <V> Germany model only

# PRINTED CIRCUIT BOARD PARTS LIST

## MAIN CIRCUIT PC BOARD (NAAR-4892-2/2A)

| CIRCUIT NO. | PART NO.     | DESCRIPTION   | CIRCUIT NO. | PART NO.    | DESCRIPTION                        |
|-------------|--------------|---------------|-------------|-------------|------------------------------------|
|             | ICs          |               |             | Diodes      |                                    |
| Q301        | 222502       | NJM4558D-X    | D505,D506   | 223205      | 1SS270A                            |
| Q302        | 22240280     | LC7821N       | D571,D572   | 223163      | 1SS133 or                          |
| Q303,Q403   | 22240025     | LC4966        | D930,D931   | 223222      | WG713A                             |
| Q401,Q402   | 22240247     | BA15218N      | D591,D592   |             |                                    |
| Q481        | 22240239     | TA7291S       | D911        | 22380038    | RBV602                             |
| Q571        | 22240752     | NJM4556L      | D921-D924   | 22380035 or | GP104003E or                       |
| Q921        | 222780125NEC | 78M12HF       | D926-D928   | 22380046    | AM01Z                              |
| Q922        | 222790125    | 79M12HF       | D929        | 224453304   | MTZ33D                             |
| Q923        | 222780565JRC | 78M56         |             | Coils       |                                    |
|             | Transistors  |               | L501,L502   | 231176S     | S-1.3C                             |
| Q304,Q404   | 2213510 or   | DTA114ES or   |             | Capacitors  |                                    |
| Q493        | 2214350      | RN2202        | C303,C304   | 354741009   | 10 $\mu$ F,16V,Elect.              |
| Q305,Q405   | 221282 or    | DTC144ES or   | C313-C316   |             |                                    |
| Q572        | 2213560      | RN1204        | C401,C402   |             |                                    |
| Q491,Q492   | 2213631 or   | RN1241-A or   | C407-C412   |             |                                    |
| Q575,Q576   | 2213632      | RN1241-B      | C491,C931   |             |                                    |
| Q501-Q504   | 2211732 or   | 2SC1845-F or  | C501,C502   |             |                                    |
| Q505,Q506   | 2213354 or   | 2SA933S-R or  | C571-C573   |             |                                    |
|             | 2212125      | 2SA1048-GR    | C927,C928   |             |                                    |
| Q509,Q510   | 2213284 or   | 2SC1740S-R    | C936,C937   |             |                                    |
|             | 2212115      | 2SC2458-GR    | C307,C308   | 354721019   | 100 $\mu$ F,6.3V,Elect.            |
| Q507,Q508   | 2211733      | 2SC1845-E     | C481,C581   |             |                                    |
| Q511,Q512   | 2211353 or   | 2SA949-O or   | C309,C310   | 374726224   | 6200pF $\pm$ 5%,50V,Plastic        |
|             | 2211354      | 2SA949-Y      | C311,C312   | 374721824   | 1800pF $\pm$ 5%,50V,Plastic        |
| Q513,Q514   | 2211633 or   | 2SC2229-O or  | C391,C392   | 374721015   | 100pF $\pm$ 10%,50V,Plastic        |
|             | 2211634      | 2SC2229-Y     | C413,C414   | 374721534   | 0.015 $\mu$ F $\pm$ 5%,50V,Plastic |
| Q515,Q516   | 2213284 or   | 2SC1740S-R or | C417,C418   |             |                                    |
|             | 2212115      | 2SC2458-GR    | C421,C422   | 374724734   | 0.047 $\mu$ F $\pm$ 5%,50V,Plastic |
| Q517,Q518   | 2202034 or   | 2SD1763A-D or | C527,C528   |             |                                    |
|             | 2202035      | 2SD1763A-E    | C503,C504   | 374721015   | 100pF $\pm$ 10%,50V,Plastic        |
| Q519,Q520   | 2202024 or   | 2SB1186A-D or | C507,C508   | 354742219   | 220 $\mu$ F,16V,Elect.             |
|             | 2202025      | 2SB1186A-E    | C513,C514   | 354722219   | 220 $\mu$ F,6.3V,Elect.            |
| Q525,Q526   | 2211633 or   | 2SC2229-O or  | C521,C522   | 354772209   | 22 $\mu$ F,63V,Elect.              |
|             | 2211634      | 2SC2229-Y <D> | C539,C540   | 354741019   | 100 $\mu$ F,16V,Elect.             |
| Q525,Q526   | 2211732 or   | 2SC1845-F or  | C567,C568   | 354700109   | 1 $\mu$ F,160V,Elect.              |
|             | 2211733      | 2SC1845-E <W> | C570        | 354791019   | 100 $\mu$ F,100V,Elect. <D>        |
| Q573        | 2211163 or   | 2SC2120-O or  |             | 354771019   | 100 $\mu$ F,63V,Elect. <W>         |
|             | 2211164      | 2SC2120-Y     | C915,C916   | 3504237     | 10000 $\mu$ F,71V,Elect. <D>       |
| Q581,Q582   | 2211732 or   | 2SC1845-F or  | C923        | 354753329   | 2200 $\mu$ F,25V,Elect.            |
|             | 2211733      | 2SC1845-E     | C924        | 354764719   | 470 $\mu$ F,35V,Elect.             |
| Q583        | 2211792 or   | 2SA992-F or   | C932        | 354761019   | 100 $\mu$ F,35V,Elect.             |
|             | 2211793      | 2SA992-E      | C933        | 354781019   | 100 $\mu$ F,50V,Elect.             |
| Q591,Q592   | 2213640 or   | DTC123JS or   |             |             |                                    |
|             | 2214660      | RN1205        |             |             |                                    |
| Q924        | 2211455      | 2SA1015-GR    |             |             |                                    |

**CAUTION: Replacement for transistor of mark \*, if necessary, must be made from the same beta group (H FE) as the original type.**

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

| CIRCUIT NO.    | PART NO.  | DESCRIPTION                               |
|----------------|-----------|---|
|                | Resistors |   |
| R393           | 5104225   | N11RGLC250KWT22Z, Balance                 |
| R409           | 5104230   | N14RLC100KWT22Z, Bass                     |
| R415           | 5104230   | N14RLC100KWT22Z, Treble                   |
| R533, R534     | 443522704 | 27 ohm, 1/2W, Metal oxide                 |
| R535, R536     | 443521014 | 100 ohm, 1/2W, Metal oxide                |
| R537, R538     | 5210259   | N06HR 2K BC, Trim                         |
| R543, R544     | 443523314 | 330 ohm, 1/2W, Metal oxide                |
| R545, R546     | 4000132Y  | 0.22 ohm $\times$ 2, 5W + 5W, Metal plate |
| R551, R552     | 453630824 | 8.2 ohm, 1W, Metal                        |
| R553, R554     | 443523924 | 3.9 kohm, 1/2W, Metal oxide               |
| R567, R568     | 453530224 | 2.2 ohm, 1/2W, Metal                      |
| R923           |           |   |
| R570           | 443522204 | 22 ohm, 1/2W, Metal oxide                 |
| R927, R930     |           |   |
| R924           | 453530824 | 8.2 ohm, 1/2W, Metal                      |
| R933           | 443524704 | 47 ohm, 1/2W, Metal oxide                 |
|                | Relaies   |   |
| RL591, RL592   | 25065339  | NRL-2P5A-DC24-046                         |
|                | Plugs     |   |
| P321           | 25055133  | NPLG-3P117                                |
| P613a          | 25055652  | NPLG-14P608                               |
|                | Terminals |   |
| P301-P303      | 25045300  | NPJ-6PDBL-159                             |
| P501           | 25060158  | NTM-8PDMN084                              |
|                | Sockets   |   |
| P711a-P713a    | 25051046  | NSCT-10P833                               |
| JL261a         | 25051087  | NSCT-3P874                                |
| JL912a, JL913a | 25051109  | NSCT-5P896                                |

**POWER SUPPLY CIRCUIT PC BOARD (NAETC-4893-2/2A)**

| CIRCUIT NO. | PART NO.  | DESCRIPTION                     |
|-------------|-----------|---------------------------------|
| R921, R922  | 453534794 | 0.47 ohm, 1/2W, Metal resistors |

**SWITCH PC BOARD (NASW-4894-2)**

| CIRCUIT NO. | PART NO. | DESCRIPTION              |
|-------------|----------|--------------------------|
| S911        | 25065437 | NSS-22157P, Slide switch |

**DISPLAY CIRCUIT PC BOARD (NADIS-4897-2/2A)**

| CIRCUIT NO. | PART NO.              | DESCRIPTION                         |
|-------------|-----------------------|-------------------------------------|
|             | IC                    |                                     |
| Q701        | 22240773Y             | $\mu$ PD78042GF-064                 |
|             | FL tube               |                                     |
| Q702        | 212127Y               | FIP13LM8                            |
|             | Remote control sensor |                                     |
| U702        | 24130010Y             | HC-312                              |
|             | Transistors           |                                     |
| Q703        | 221282 or             | DTC144ES or                         |
|             | 2213560               | RN1204                              |
| Q704-Q706   | 2213284 or            | 2SC1740S-R or                       |
|             | 2212115               | 2SC2458-GR                          |
| Q707        | 2213510 or            | DTA114ES or                         |
|             | 2214350               | RN2202                              |
|             | Diodes                |                                     |
| D701, D702  | 223205 or             | 1SS270A or                          |
| D704, D705  | 223163                | 1SS133                              |
| D708        | 223205 or             | 1SS270A or                          |
| D710-D712   | 223163                | 1SS133                              |
| D703        | 224450913             | MTZ9.1C                             |
| D706, D707  | 224450562             | MTZ5.6B                             |
| D709        | 225291D               | SEL4910D-D, LED                     |
|             | Resonator             |                                     |
| X701        | 3010163               | CST4.19MGW, Crystal                 |
|             | Coils                 |                                     |
| L701-L703   | 233454K220            | NCH-1452 220K                       |
|             | Capacitors            |                                     |
| C701        | 3000075Y              | 0.047F, 5.5V, Super                 |
| C702        | 375524744             | 0.47 $\mu$ F $\pm$ 5%, 50V, Plastic |
| C703, C709  | 354721019             | 100 $\mu$ F, 6.3V, Elect.           |
| C711        |                       |                                     |
| C704        | 354780109             | 1 $\mu$ F, 50V, Elect.              |
| C706, C707  |                       |                                     |
|             | Switches              |                                     |
| S701-S703   | 25035652              | NPS-111-S604                        |
| S707-S713   |                       |                                     |
|             | Plugs                 |                                     |
| P711b-P713b | 25055659              | NPLG-10P615                         |
|             | Holder                |                                     |
|             | 27190937Y             | FL tube                             |
|             | Retainer              |                                     |
|             | 27141575Y             | RI terminal                         |

**VOLUME CIRCUIT PC BOARD (NAAF-4899-2)**

| CIRCUIT NO. | PART NO. | DESCRIPTION                       |
|-------------|----------|-----------------------------------|
| R431        | 5104334Y | N16RGL100KBT25F, Variable, Volume |
| P613b       | 25050985 | NSCT-12P772, Socket               |

## POWER SUPPLY CIRCUIT PC BOARD (NAPR-4900-2/2B)

| CIRCUIT NO. | PART NO.                       | DESCRIPTION                     |
|-------------|--------------------------------|---------------------------------|
|             | Transistors                    |                                 |
| Q951        | 221282 or<br>2213560           | DTC144ES or<br>RN1204           |
| Q952        | 2213650 or<br>2214680          | DTD113ZS or<br>RN1226           |
|             | Diodes                         |                                 |
| D951-D954   | 22380035 or<br>22380046        | GP104003E or<br>AM01Z           |
| D955        | 223222,<br>223205 or<br>223163 | WG713A,<br>1SS270A or<br>1SS133 |
|             | Capacitors                     |                                 |
| C901        | 3500065A                       | △ DE7150FZ103PAC400V/125V       |
| C952        | 354742219                      | 220 $\mu$ F,16V,Elect.          |
|             | Resistors                      |                                 |
| R951        | 453530824                      | 8.2 ohm,1/2W,Metal              |
|             | Power transformer              |                                 |
| T902        | 2300670                        | △ NPT-1111D <D>                 |
|             | 2300672                        | △ NPT-1111DG <W>                |
|             | Relay                          |                                 |
| RL901       | 25065483                       | △ NRL-1P5A-DC-12-084            |

| CIRCUIT NO. | PART NO.    | DESCRIPTION                       |
|-------------|-------------|-----------------------------------|
|             | Fuses       |                                   |
| F901        | 252166Y     | △ 6.3A-UL/T-237                   |
| F902        | 252076      | △ 3.15A-SE-EAK <W>                |
|             | Fuseholders |                                   |
| F901a       | 25050065    | △ YSH403T                         |
| F902a       | 25050065    | △ YSH403T <W>                     |
|             | Plug        |                                   |
| P901a       | 25055675    | NPLG-2P631 <D>                    |
|             | Socket      |                                   |
| P902        | 25051124    | △ NSCT-6P911,AC outlet <D>        |
|             | 25051125    | △ NSCT-4P912,AC outlet <W>        |
|             | Switch      |                                   |
| S901        | 25065437    | △ NSS-22157P,Voltage selector <W> |

## VIDEO CIRCUIT PC BOARD (NAETC-4901-2)

| CIRCUIT NO. | PART NO.                       | DESCRIPTION                     |
|-------------|--------------------------------|---------------------------------|
|             | IC                             |                                 |
| Q253        | 222840661                      | 4066B                           |
|             | Transistors                    |                                 |
| Q251,Q252   | 2213284 or<br>2212115          | 2SC1740S-R or<br>2SC2458-GR     |
|             | Diode                          |                                 |
| D251        | 223222,<br>223205 or<br>223163 | WG713A,<br>1SS270A or<br>1SS133 |
|             | Capacitors                     |                                 |
| C251,C252   | 354721019                      | 100 $\mu$ F,6.3V,Elect.         |
| C257        |                                |                                 |
| C255,C256   | 354724719                      | 470 $\mu$ F,6.3V,Elect.         |
| C259        | 354741019                      | 100 $\mu$ F,16V,Elect.          |
|             | Terminal                       |                                 |
| P251        | 25045299                       | NPJ-3PDYE158                    |
| P261b       | 25055132Y                      | NPLG-2P116                      |

## RI TERMINAL PC BOARD(NAETC-4904-2)

| CIRCUIT NO. | PART NO. | DESCRIPTION  |
|-------------|----------|--------------|
|             | Terminal |              |
| P961        | 25045330 | NPJ-2PDBL184 |

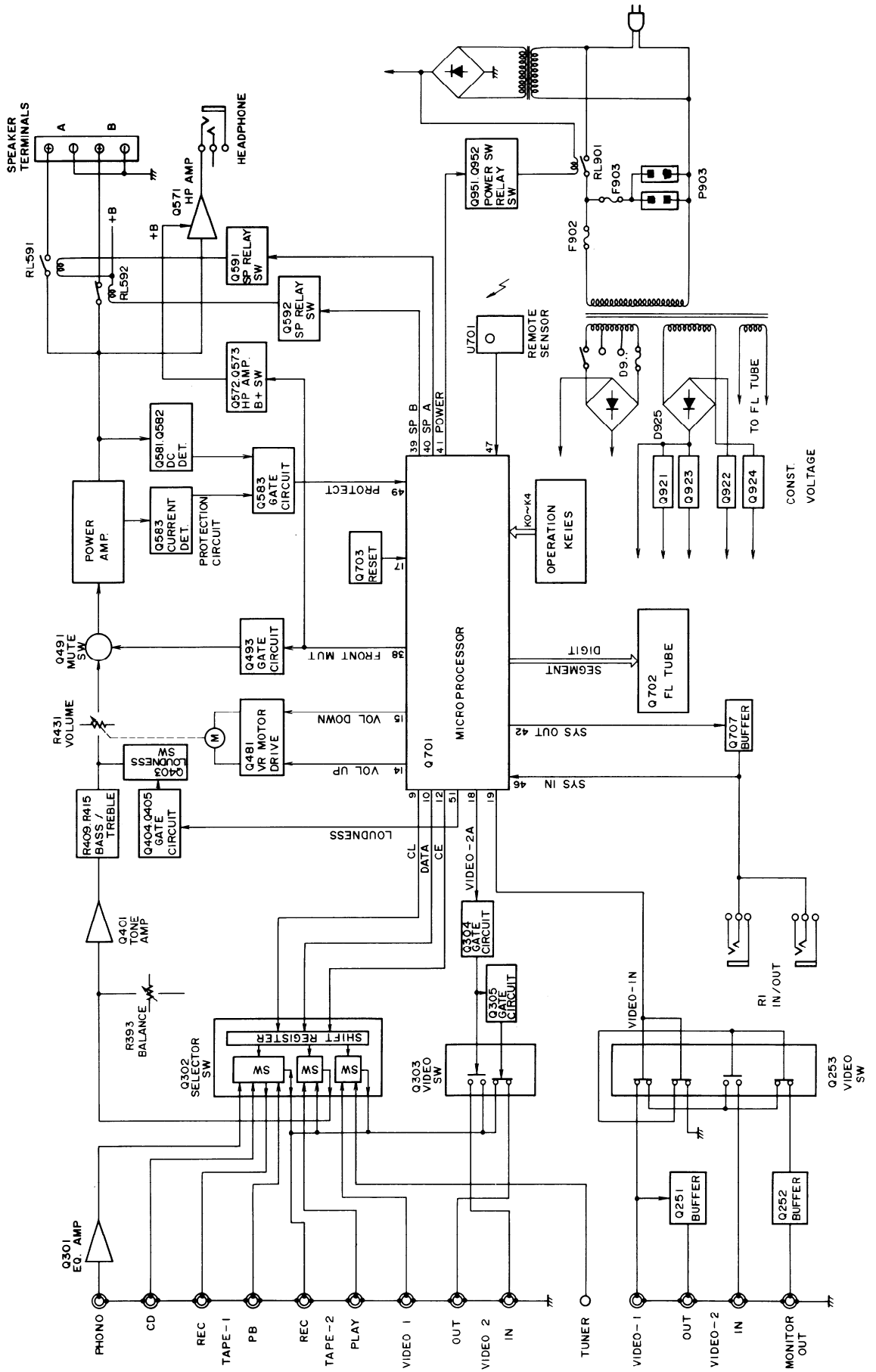
## HEADPHONE TERMINAL PC BOARD(NASW-4905-2)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|-------------|
|             | Terminal |             |
| P503        | 25045255 | YKB21-5009  |

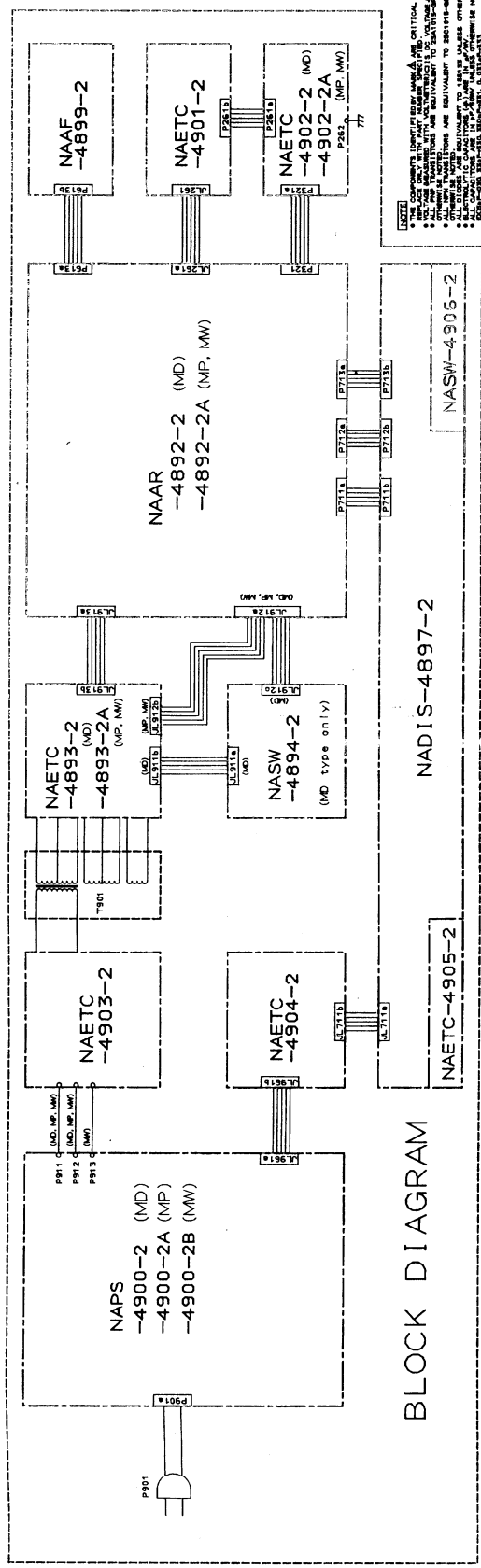
## LOUDNESS SWITCH PC BOARD(NASW-4906-2)

| CIRCUIT NO. | PART NO. | DESCRIPTION  |
|-------------|----------|--------------|
|             | Switch   |              |
| S714        | 25035652 | NPS-111-S604 |

# BLOCK DIAGRAM

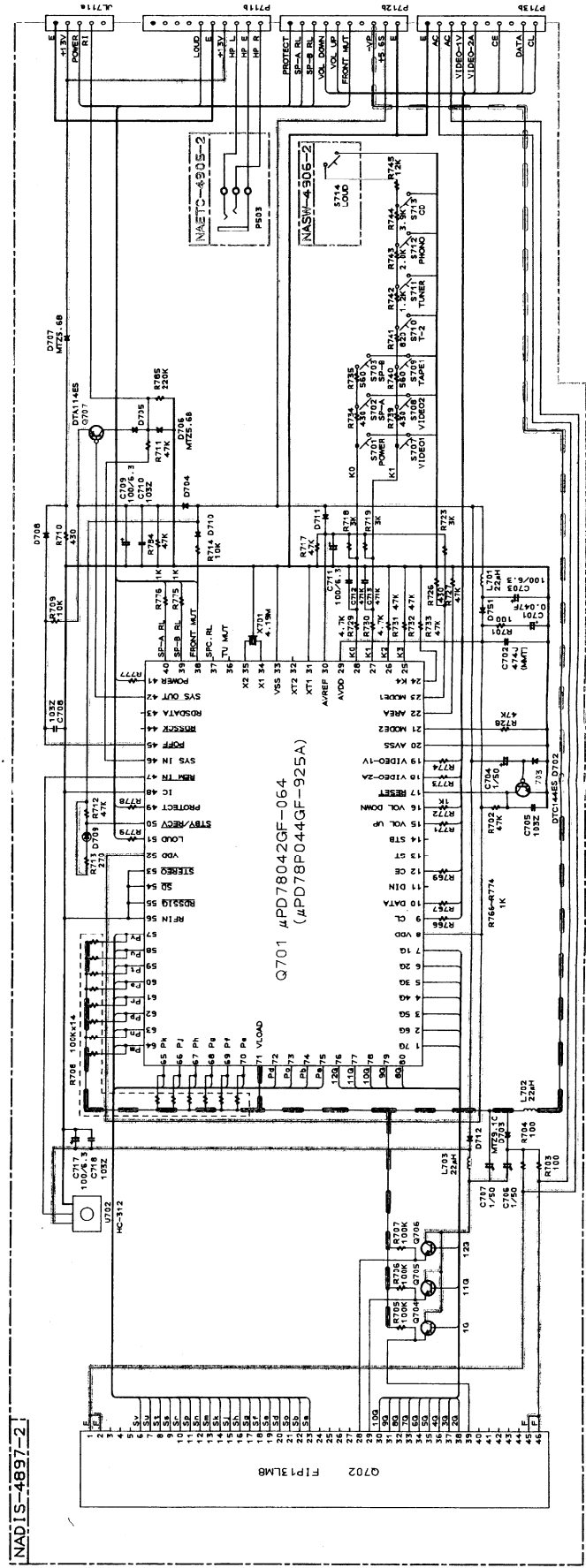


SCHEMATIC DIAGRAM



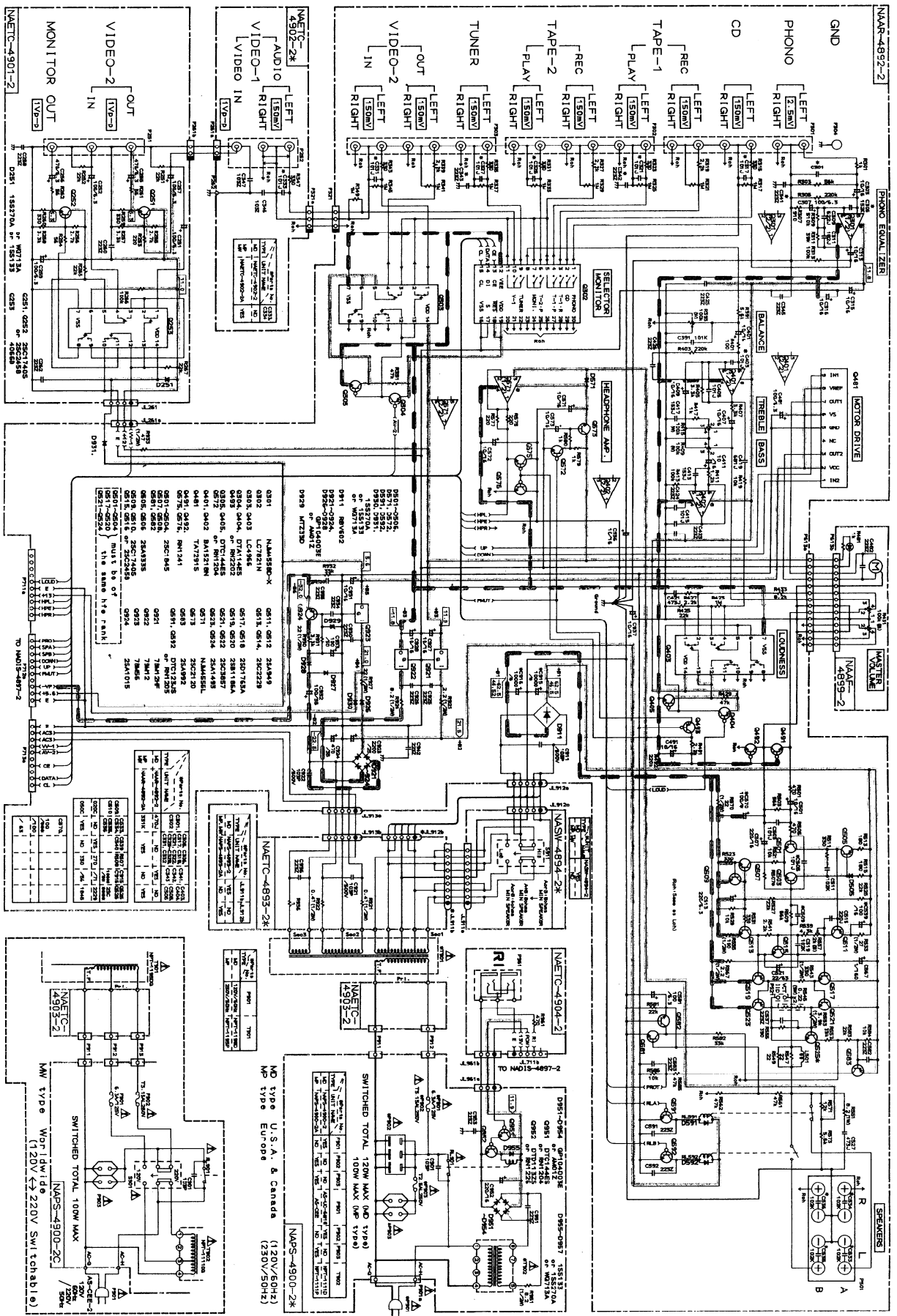
BLOCK DIAGRAM

NOTE: Components identified with asterisks are critical per warranty. These components must be replaced with the original or an equivalent component. Components identified with a triangle are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a square are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a circle are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a diamond are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a star are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a plus sign are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a minus sign are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a percent sign are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a dollar sign are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a hash sign are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with an ampersand are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a copyright symbol are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a registered trademark symbol are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a trademark symbol are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a service mark symbol are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a copyright symbol are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a registered trademark symbol are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a trademark symbol are not recommended for replacement unless the manufacturer's instructions specifically require it. Components identified with a service mark symbol are not recommended for replacement unless the manufacturer's instructions specifically require it.



# SCHEMATIC DIAGRAM

A B C D E F G



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