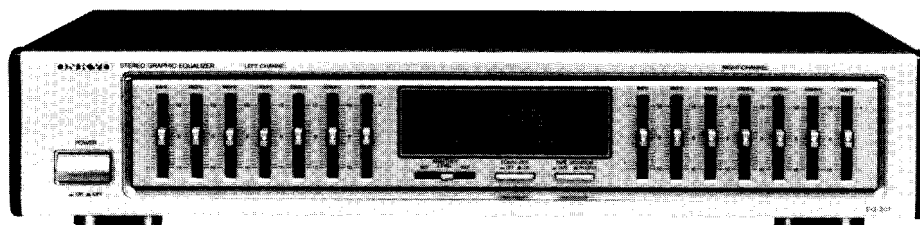


ONKYO® SERVICE MANUAL

Stereo Graphic Equalizer

MODEL EQ-201



Black and Silver models

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

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL. MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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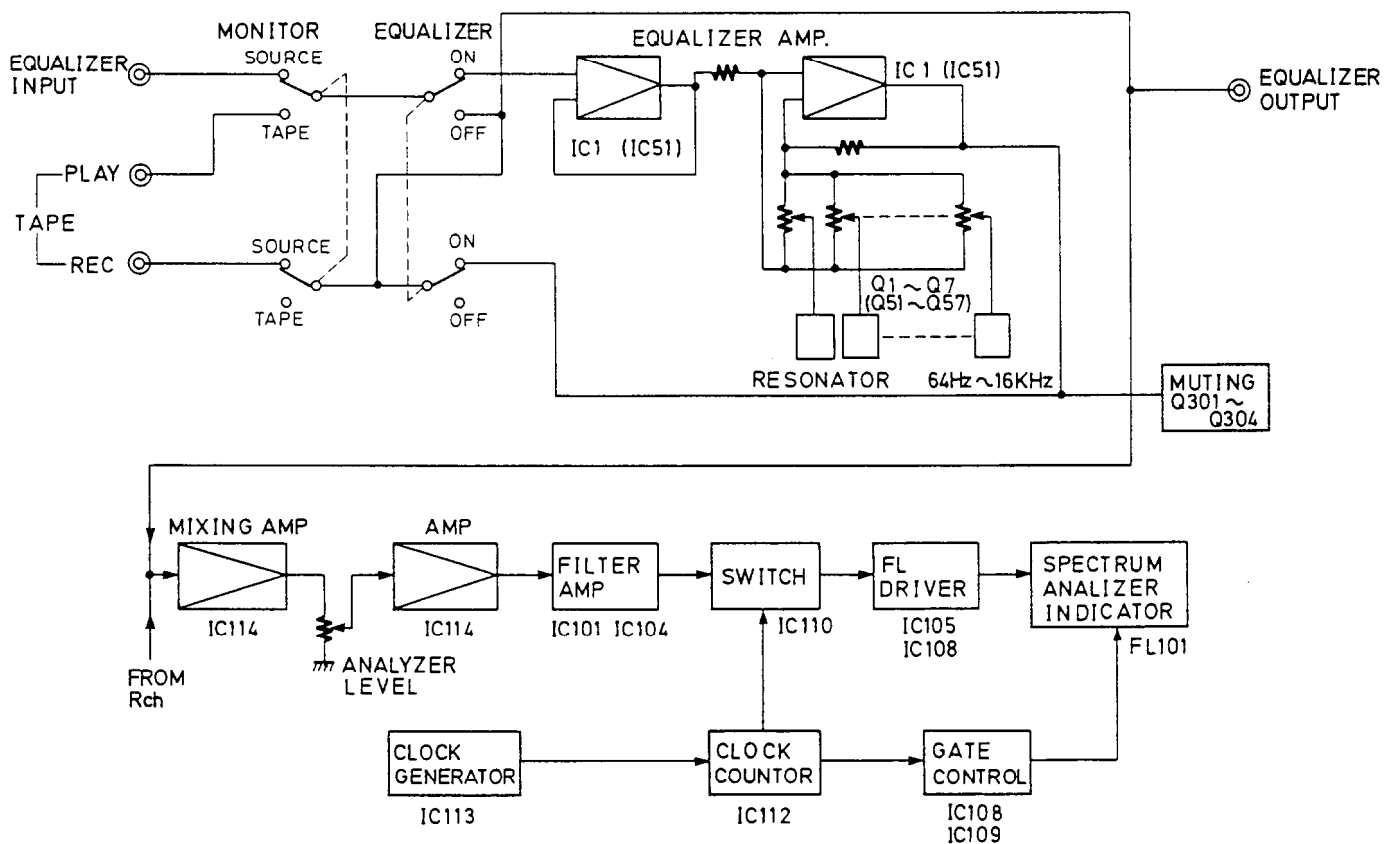
ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

| | |
|----------------------------|---|
| Input: | Input sensitivity (FLAT): 150mV |
| | Input impedance: 50 kohms |
| Output: | Output voltage (FLAT): 150mV |
| | Output impedance: 1.0 kohms |
| Max. input: | 5 volts, 20Hz – 20 kHz, 0.05% THD |
| Frequency response: | 10Hz to 35kHz (+0, -0.5dB) |
| Total harmonic distortion: | Less than 0.01% at 20Hz-20kHz, 1.5V output (FLAT) |
| Signal to noise ratio: | 100 dB, 1.5V output, IHF-A input short |
| Adjustable range: | ±12 dB |
| Gain: | 0 dB |
| AC outlet: | 200 watts (UNSWITCHED) (USA and Canadian models only) |
| Power supply: | European models: AC230V, 50Hz Canadian models: AC120V, 60Hz British & Australian models: AC240V, 50Hz Worldwide models: AC120V, 60Hz or AC220V, 50Hz (Switchable) |
| Dimensions: | 455(W) x 90(H) x 303(D)mm 17-15/16" x 3-9/16" x 11-15/16" |
| Weight: | 3.4 kg., 7.5 lbs. |

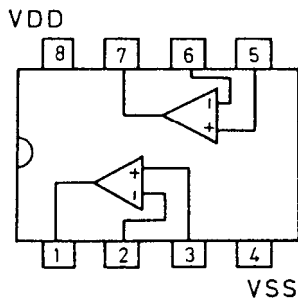
Specifications and features are subject to change without notice.

BLOCK DIAGRAM

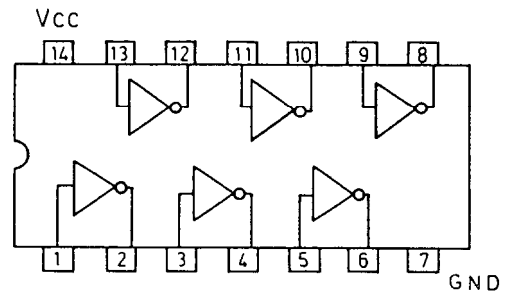


IC BLOCK DIAGRAM

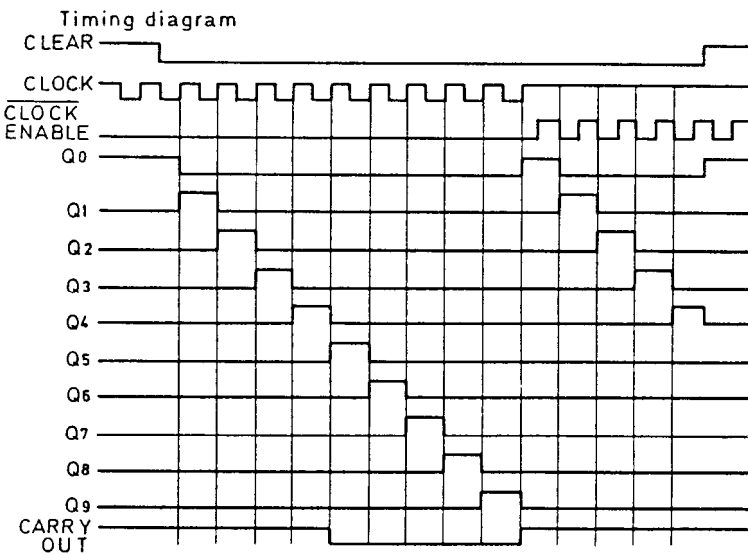
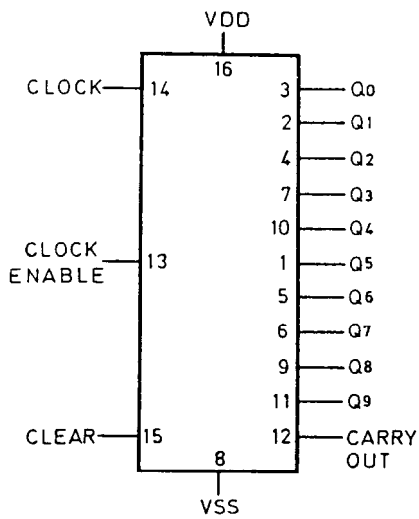
NJM4558DX(OP. Amp.)



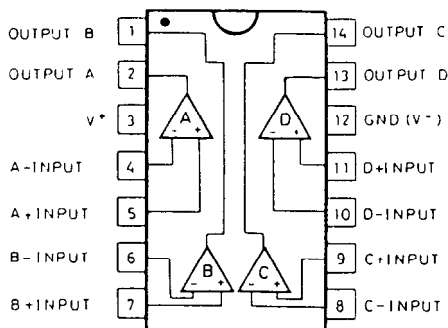
**4069UBD(Inverter)
4069UBP**



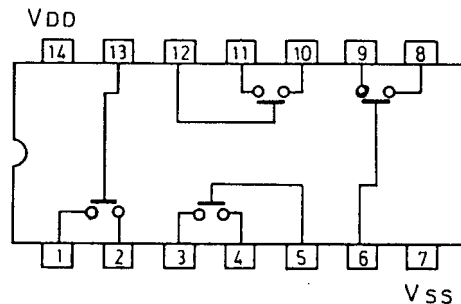
4017BP(Decade Counter)



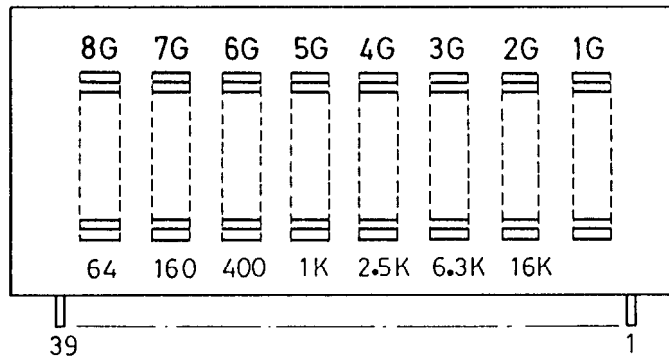
NJM2901N(Comparator)



**4066B (Switch)
4066BD**



BG-394ZK(Fluorescent indicator tube)



| | | | | | | | | | | |
|-----------|---|---|----|----|----|----|----|----|----|----|
| Pin NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| ELECTRODE | F | - | S1 | S2 | S3 | 8G | S4 | S5 | S6 | 7G |

| | | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|----|----|----|
| Pin NO. | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| ELECTRODE | S7 | S8 | - | 6G | - | - | - | 5G | - | - |

| | | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|-----|-----|----|
| Pin NO. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| ELECTRODE | - | 4G | - | - | - | 3G | S9 | S10 | S11 | 2G |

| | | | | | | | | | |
|-----------|-----|-----|-----|----|-----|-----|----|----|----|
| Pin NO. | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| ELECTRODE | S12 | S13 | S14 | 1G | S16 | S17 | - | - | F |

PRECAUTIONS

1. 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.

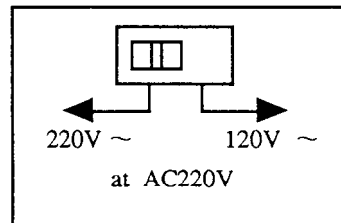
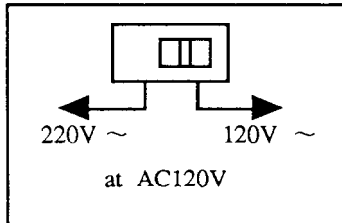
2. Voltage selector (rear panel)

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.



PACKING PARTS LIST

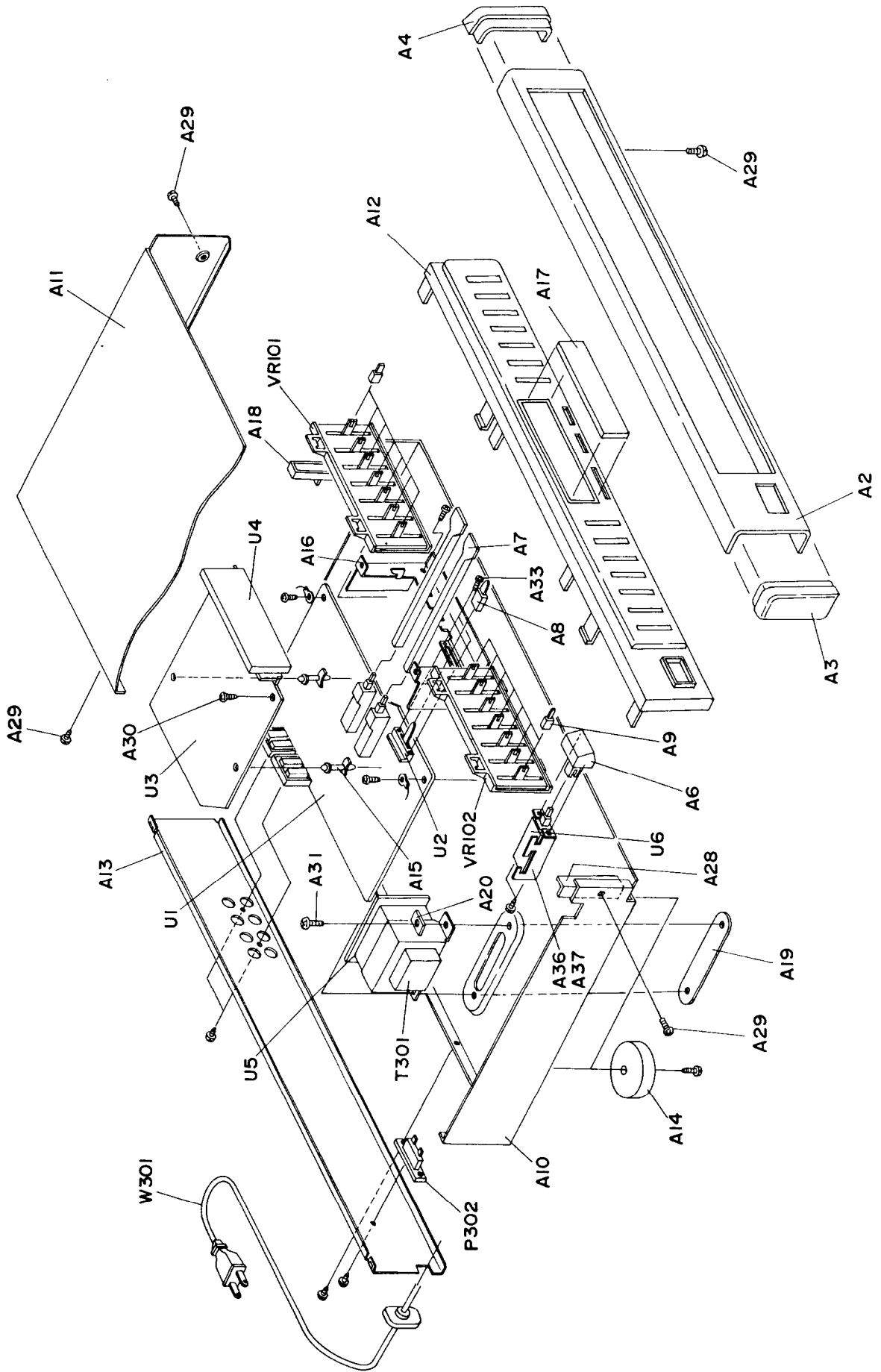
| REF. NO. | PART NO. | DESCRIPTION |
|----------|-----------|-------------------------|
| A851 | 29052438 | Master carton box [BLK] |
| A851 | 29052439 | Master carton box [SIL] |
| A852 | 29091503 | Pad |
| A853 | 29100122 | 800×450, Poly-vinyl bag |
| A854 | 29110077 | Damplon tape |
| A855 | 282301 | Sealing hook |
| A859 | 29355133A | Caution (DBP) [V] |
| | 29360863 | Label (CAUTION) [B] |

ACCESSORY BAG ASS'Y

| | |
|-----------|--|
| 29100006A | 250×360, Poly-vinyl bag |
| 2010112 | Connection cable |
| 29341719 | Instruction manual [D, N] |
| 29341720 | Instruction manual [C, P, F, V, W, A, B] |
| 29365019A | Warranty card [N] |
| 29365024A | Warranty card [F] |
| 29365020F | Warranty card [V] |
| 29365029 | Warranty card [A] |
| 29365022 | Warranty card [B] |
| 29358002J | Service station list [N] |
| 29100107 | Poly-vinyl bag (Warranty) [F] |
| 29100094A | Poly-vinyl bag (Warranty) [V] |
| 25055040 | CV-K-2, Conversion plug [W] |

| NOTE | [D]: | Only 120V model |
|------|--------|-------------------------|
| | [P]: | Only 230V model |
| | [W]: | Only 120V/220V model |
| | [N]: | Only U.S.A. model |
| | [C]: | Only Canadian model |
| | [V]: | Only West Germany model |
| | [F]: | Only French model |
| | [A]: | Only Australian model |
| | [B]: | Only British model |
| | [BLK]: | Only Black model |
| | [SIL]: | Only Silver model |

CHASSIS-EXPLODED VIEW



CHASSIS EXPLODED VIEW PARTS LIST

| REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION |
|------------|-------------|--|----------|-------------|---|
| A2 | 27211444 | FRONT PANEL [D] [P] [W] [Q] [BLK] | U001 | 1W097508-2B | NAAF-3008-2B, EQUALIZER CIRCUIT & POWER SUPPLY PC BOARD ASS'Y [W] |
| A2 | 27211454 | FRONT PANEL ASS'Y [V] [BLK] | U002 | 1W097509-2 | NAETC-3009-2, ANALYZER LEVEL CONTROL PC BOARD ASS'Y |
| A2 | 27211455 | FRONT PANEL ASS'Y [SIL] | U003 | 1W097510-2 | NADG-3010-2, SPECTRAM ANALYZER DRIVE CIRCUIT PC BOARD ASS'Y |
| A3 | 28125242A | END CAP (L) | U004 | 1W097511-2 | NADIS-3011-2, SPECTRUM ANALYZER INDICATOR PC BOARD ASS'Y |
| A4 | 28125243A | END CAP (R) | U005 | 1W097512-2 | NAPS-3012-2, POWER TRANSFORMER PC BOARD ASS'Y |
| A5 | 28135199 | NAME PLATE | U006 | 1W097513-2 | NASW-3013-2, POWER SWITCH CIRCUIT PC BOARD ASS'Y |
| A6 | 28324140 | KNOB (POW) [BLK] | U007 | 1W097514-2 | NASW-3014-2, SLIDE SWITCH PC BOARD ASS'Y [W] |
| A6 | 28324184 | KNOB (POW) [SIL] | U008 | 1W097515-2 | NAETC-3015-2, AC SOCKET PC BOARD ASS'Y [D] |
| A7 | 28324670 | KNOB (PUSH) [BLK] | | | |
| A7 | 28324691 | KNOB (PUSH) [SIL] | | | |
| A8 | 28324671 | KNOB (SLIDE) [BLK] | | | |
| A8 | 28324692 | KNOB (SLIDE) [SIL] | | | |
| A9 | 28324672 | KNOB (GE) [BLK] | | | |
| A9 | 28324693 | KNOB (GE) [SIL] | | | |
| A10 | 27100262 | CHASSIS | | | |
| A11 | 28184488 | TOP COVER | | | |
| A12 | 27110723 | GUIDE PANEL [BLK] | | | |
| A12 | 27110725 | GUIDE PANEL [SIL] | | | |
| A13 | 27121611 | BACK PANEL [D] | | | |
| A13 | 27121612 | BACK PANEL [P] | | | |
| A13 | 27121613 | BACK PANEL [V] | | | |
| A13 | 27120614 | BACK PANEL [W] | | | |
| A13 | 27121615 | BACK PANEL [Q] | | | |
| A14 | 27175254 | BOTTOM LEG ASS'Y | | | |
| A15 | 27190901 | SPLS-22, HOLDER | | | |
| A16 | 27141566 | BRACKET (FL) | | | |
| A17 | 28191637 | CLEAR PLATE | | | |
| A18 | 27190900 | HOLDER (VR) | | | |
| A19 | 27141573 | BRACKET (PT) | | | |
| A20 | 870065 | WASHER (PT) | | | |
| A28 | 27141574 | BRACKET (L) [D] | | | |
| A29 | 838430088 | 3TTB+8BBC, TAPPING SCREW | | | |
| A30 | 831130088 | 3TTW+8B, TAPPING SCREW | | | |
| A31 | 801513 | 4SMP10WSW+10FN, SPECIAL TAPPING SCREW | | | |
| A33 | 82142003 | 2P+3FBC, PAN HEAD SCREW | | | |
| A36 | 28141196 | CUSHION | | | |
| A37 | 27270358 | SPACER (POW) | | | |
| ▲ T301 | 2300235 | NPT-964D, POWER TRANSFORMER [D] | | | |
| ▲ T301 | 2300853 | NPT-964P, POWER TRANSFORMER [P, V] | | | |
| ▲ T301 | 2300236 | NPT-964DG, POWER TRANSFORMER [W] | | | |
| ▲ T301 | 2300237 | NPT-964Q, POWER TRANSFORMER [Q] | | | |
| VR101, 102 | 6112011 | N30LGLC100KW15ZX7, VARIABLE RESISTOR | | | |
| ▲ W301 | 253180 | AS-EQ201UD, POWER SUPPLY CABLE [D] | | | |
| ▲ W301 | 253181 | AS-EQ201UP, POWER SUPPLY CABLE [P, V, W, B] | | | |
| ▲ W301 | 253182 | AS-EQ201UQA, POWER SUPPLY CABLE [A] | | | |
| P302 | 25060055 | NTM-2PMN22, TERMINAL [P, V, W, Q] | | | |
| U001 | 1W097508-2 | NAAF-3008-2, EQUALIZER CIRCUIT & POWER SUPPLY PC BOARD ASS'Y [D, Q] | | | |
| U001 | 1W097508-2A | NAAF-3008-2A, EQUALIZER CIRCUIT & POWER SUPPLY PC BOARD ASS'Y [P, V] | | | |

NOTE [D]: Only 120V model
[P]: Only 230V model
[Q]: Only 240V model
[W]: Only 120V/220V model
[V]: Only West Germany model
[A]: Only Australian model
[B]: Only British model
[BLK]: Only Black model
[SIL]: Only Silver model

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

PRINTED CIRCUIT BOARD PARTS LIST

EQUALIZER CIRCUIT PC BOARD (NAAF-3008-2, -2A, -2B) PARTS LIST

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|------------------------|--------------|-------------------------------------|
| ICs | | |
| IC1, IC51 | 222502 | NJM4558DX |
| IC301 | 222780155JRC | 78M15HF |
| IC302 | 222790155JRC | 79M15HF |
| Transistors | | |
| Q1-Q7 | 2213284 | 2SC1740SR |
| Q51-Q57 | | |
| Q301, Q302 | | |
| Q303, Q304 | 2213683 | 2SC3327A |
| Diodes | | |
| D301 | 223892 | DF02M |
| D302 | 22380060 | DSK108 |
| D303 | 223172 | 1SS131 |
| D304 | 224450821 | MTZ8.2A |
| Capacitors | | |
| C1, C4 | 374723314 | 330pF, 50V, Film (TF) [P, V, W] |
| C2 | 374726814 | 680pF, 50V, Film (TF) [P, V, W] |
| C3 | 374726814 | 680pF, 50V, Film (TF) [P, V] |
| C5, C55 | 354780109 | 1 μ F, 50V, Elect. |
| C6, C56 | 374724714 | 470pF, 50V, Film (TF) |
| C7, C57 | 354780479 | 4.7 μ F, 50V, Elect. |
| C9, C59 | 354780339 | 3.3 μ F, 50V, Elect. |
| C10, C60 | 374726834 | 0.068 μ F, 50V, Film (TF) |
| C11, C61 | 354780159 | 1.5 μ F, 50V, Elect. |
| C12, C62 | 374722234 | 0.022 μ F, 50V, Film (TF) |
| C13, C63 | 354784799 | 0.47 μ F, 50V, Elect. |
| C14, C64 | 374721034 | 0.01 μ F, 50V, Film (TF) |
| C15, C65 | 354781599 | 0.15 μ F, 50V, Elect. |
| C16, C66 | 374726824 | 6800pF, 50V, Film (TF) |
| C17, C67 | 374726834 | 0.068 μ F, 50V, Film (TF) |
| C18, C68 | 374722724 | 2700pF, 50V, Film (TF) |
| C19, C69 | 374722734 | 0.027 μ F, 50V, Film (TF) |
| C20, C70 | 374721524 | 1500pF, 50V, Film (TF) |
| C21, C71 | 374721034 | 0.01 μ F, 50V, Film (TF) |
| C22, C72 | 374728214 | 820pF, 50V, Film (TF) |
| C23, C52 | 374726814 | 680pF, 50V, Film (TF) [P, V, W] |
| C73 | | |
| C29, C30, C51 | 374723314 | 330pF, 50V, Film (TF) [P, V, W] |
| C54, C79, C80 | | |
| C53 | 374726814 | 680pF, 50V, Film (TF) [P, V] |
| C302, C303 | 374721034 | 0.01 μ F, 50V, Film (TF) |
| C340, C305 | 354761029 | 1000 μ F, 35V, Elect. |
| C306, C307 | 354744709 | 47 μ F, 16V, Elect. |
| C308 | 354780479 | 4.7 μ F, 50V, Elect. |
| C309 | 354762219 | 220 μ F, 35V, Elect. |
| C310 | 354761019 | 100 μ F, 35V, Elect. |
| Resistors | | |
| R301, R302 | 442623914 | 390 Ω , 1W, Metal oxide film |
| Switches | | |
| SW2 | 25035464 | NPS-162-L426, Push switch |
| SW3 | 25035566 | NPS-142-L528, Push switch |
| Input terminals | | |
| | 25045167 | NPJ-4PDBL61 |
| | 27160169 | Radiator |
| CN104 | 25050143 | NJPS-6P-S, Jumper socket |

ANALYZER LEVEL CONTROL PC BOARD (NAETC-3009-2) PART LIST

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|---------------------------------------|
| VR201 | 6162002 | N20LL100KB25, Slide variable resistor |

SPECTRUM ANALYZER DRIVE CIRCUIT PC BOARD (NADG-3010-2) PART LIST

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------------|------------------------------|-------------------------------|
| ICs | | |
| IC101-IC104 | 222502 | NJM4558DX |
| IC105-IC109 | 22240005 | NJM2901N |
| IC110, IC111 | 222840661 or 222840661JRC | 4066B or 4066BD |
| IC112 | 222840171 | 4017BP |
| IC113 | 222840692 or 222840692JRC | 4069UBP or 4069UBD |
| IC114 | 222502 | NJM4558DX |
| Diodes | | |
| D101-D115 | 223172 | 1SS131 |
| Capacitors | | |
| C101, C102 | 354782299 | 0.22 μ F, 50V, Elect. |
| C103, C104 | 374728234 | 0.082 μ F, 50V, Film (TF) |
| C105, C106 | 374723334 | 0.033 μ F, 50V, Film (TF) |
| C107, C108 | 374721534 | 0.015 μ F, 50V, Film (TF) |
| C109, C110 | 374725624 | 5600pF, 50V, Film (TF) |
| C111, C112 | 374722224 | 2200pF, 50V, Film (TF) |
| C113, C114 | 374721024 | 1000pF, 50V, Film (TF) |
| C115-C125 | 354741009 | 10 μ F, 16V, Elect. |
| C127 | 354744719 | 470 μ F, 16V, Elect. |

SPECTRUM ANALYZER INDICATOR PC BOARD (NADIS-3011-2) PART LIST

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------------------|----------|-------------|
| Fluorescent tube | | |
| FL101 | 212033 | BG-394ZK |

POWER SWITCH CIRCUIT PC BOARD (NASW-3013-2) PART LIST

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|------------------|----------|--------------------------------------|
| Capacitor | | |
| Δ C301 | 3000063 | 0.01 μ F, AC400V/125V, Film (IS) |
| Switch | | |
| Δ SW1 | 25035262 | NPS-111-L226P, Push switch |

SLIDE SWITCH PC BOARD (NASW-3014-2) PART LIST

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---------------|----------|----------------------------|
| Switch | | |
| Δ SW4 | 25065228 | NSS-2299, Slide switch [W] |

AC SOCKET PC BOARD (NAETC-3015-2) PART LIST

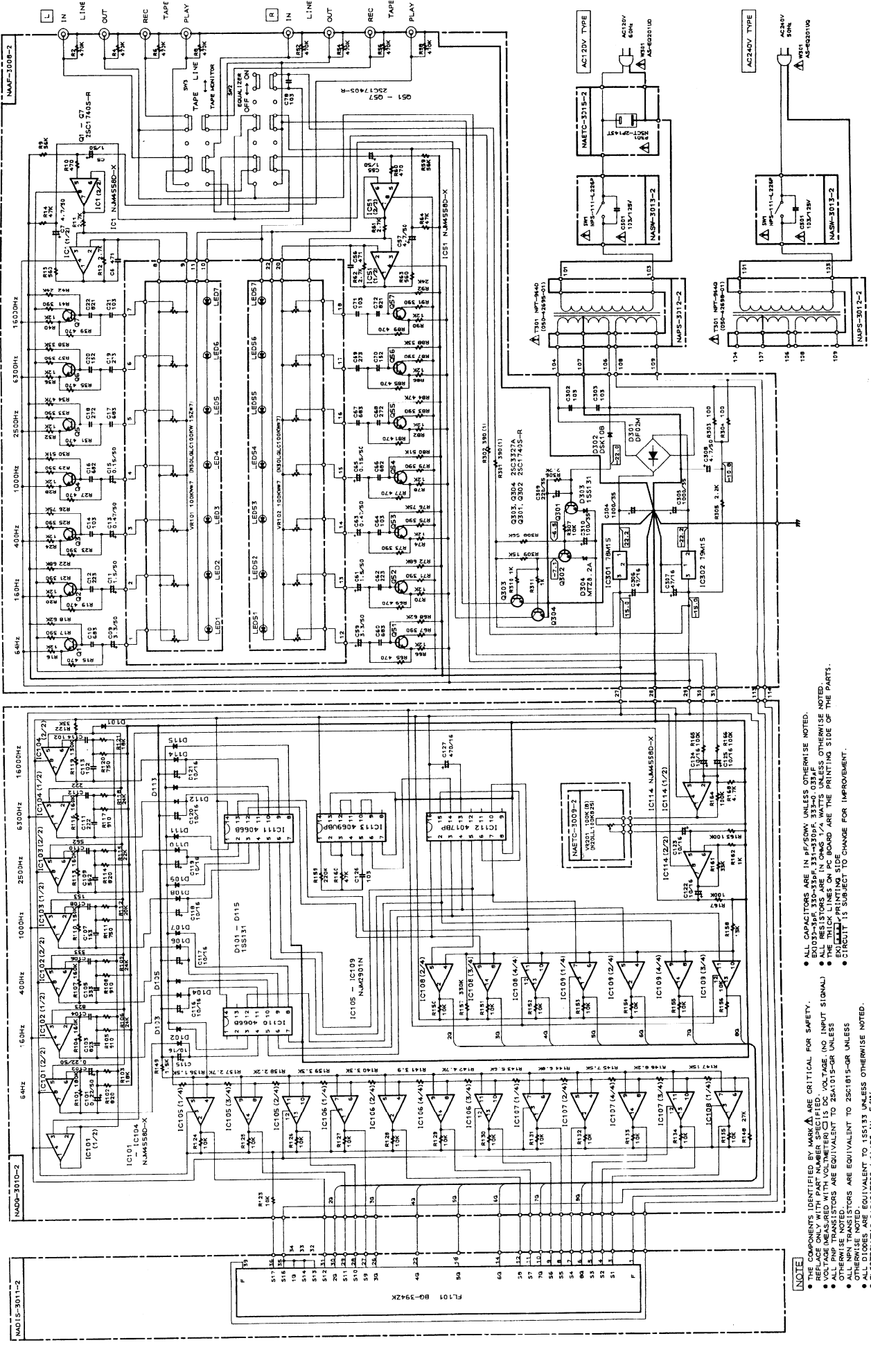
| CIRCUIT NO. | PART NO. | DESCRIPTION |
|------------------|----------|-----------------|
| AC OUTLET | | |
| Δ P301 | 25050316 | NSCT-2P143T [D] |

NOTE [D]: Only 120V model
 [P]: Only 230V model
 [W]: Only 120V/220V model
 [V]: Only West Germany model

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

SCHEMATIC DIAGRAM

MODEL EQ-201(AC120V, 240V type)

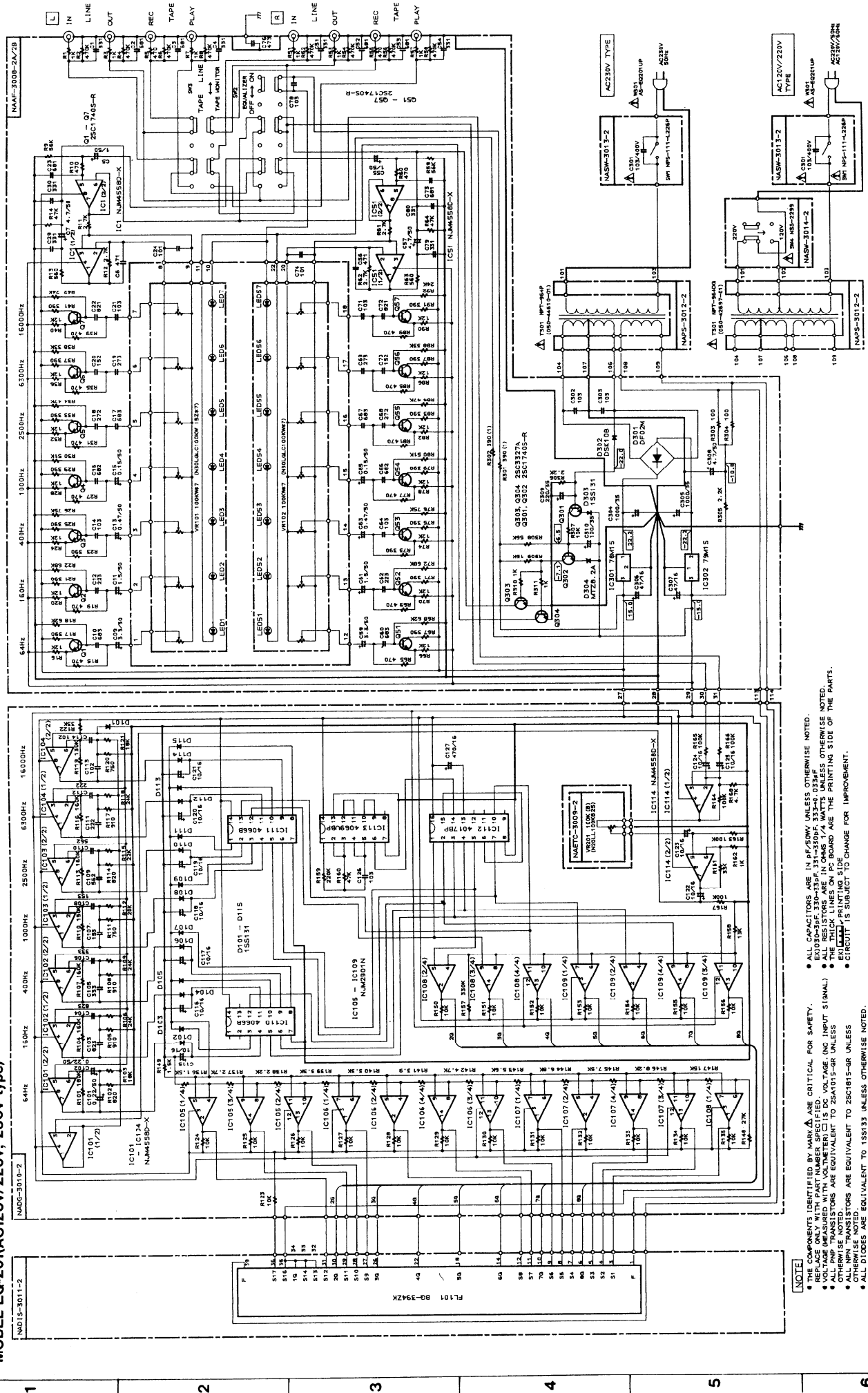


NOTE

- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY.
- EXCEPT AS SPECIFIED, ALL RESISTORS ARE IN OHMS (NO INPUT SIGNAL).
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1S5133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS ∇ ARE IN μ FARAD.
- ALL CAPACITORS ARE IN μ FARAD UNLESS OTHERWISE NOTED.
- EXCEPT AS SPECIFIED, ALL TRANSISTORS ARE IN OHMS (NO INPUT SIGNAL).
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1S5133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS ∇ ARE IN μ FARAD.

SCHEMATIC DIAGRAM

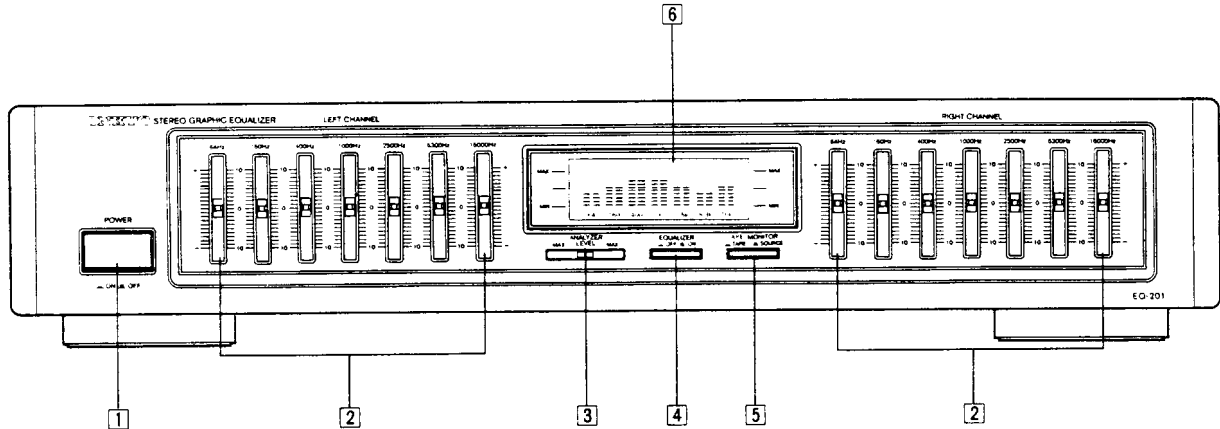
MODEL EQ-201(AC120V/220V, 230V type)



NOTE

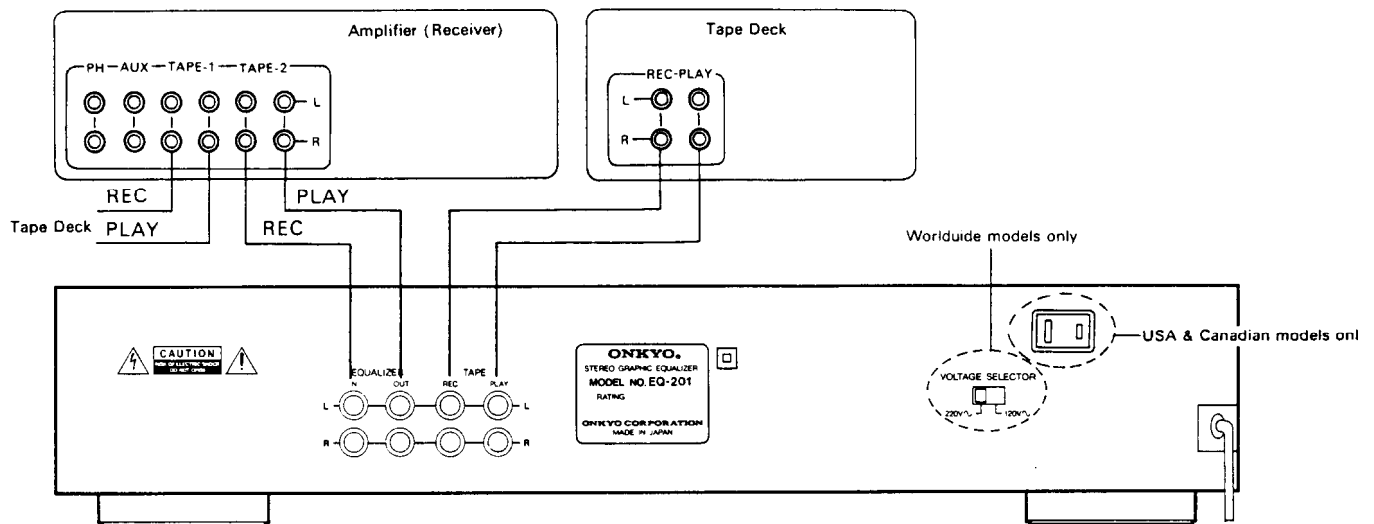
- COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY.
- REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE MEASURED WITH VOLTMETER \square IS DC VOLTAGE, (AC INPUT SIGNAL).
- VOLTAGE MEASURED WITH VOLTMETER \square IS AC VOLTAGE, UNLESS OTHERWISE NOTED.
- OTHERWISE NOTED, COMPONENTS ARE EQUIVALENT TO 25C1015-GR UNLESS OTHERWISE NOTED.
- ALL NPV TRANSISTORS ARE EQUIVALENT TO 25C1015-GR UNLESS OTHERWISE NOTED.
- ALL NPV TRANSISTORS ARE EQUIVALENT TO 15S133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (Φ) ARE IN μ F/VV.

FRONT PANEL FACILITIES



- 1 Power Switch (POWER)**
Depress once to turn power ON and once again to turn power OFF. When Power is turned OFF, set the Equalizer switch **4** to the OFF position or the Tape monitor switch of the amplifier to the SOURCE position.
- 2 Level Controls and Indicators**
Each control raises and lowers the response of the frequency range centered at the indicated frequency. Above the center '0' click-stop position, response is emphasized; below the '0' position, response is attenuated.
- 3 Spectrum Analyzer Level Control (ANALYZER LEVEL)**
This control slider is used to adjust the indication level of the spectrum analyzer. Slide it to the right to bring up the overall indication level, and slide it to the left to bring down the overall indication level.
- 4 Equalizer Switch (EQUALIZER)**
Depress to the OFF position (\blacksquare) to turn off the equalization effect set by the level controls. In the ON position (\blacktriangle) (Level Control Indicators light), the program source is equalized according to the settings of the level controls.
- 5 Monitor Switch (TAPE MONITOR)**
Depress to the TAPE position (\blacktriangle) to equalize the playback signal from the tape deck connected to the rear panel TAPE terminals. In the SOURCE position (\blacksquare), the signal from the amplifier connected to the rear panel EQUALIZER INPUT terminals is input for equalization.
- 6 Spectrum Analyzer Display**
The combined left and right channel signal level output from the analyzer output terminals is displayed in each frequency band.

SYSTEM CONNECTIONS



Do not plug in the power cord until all connections have been made.