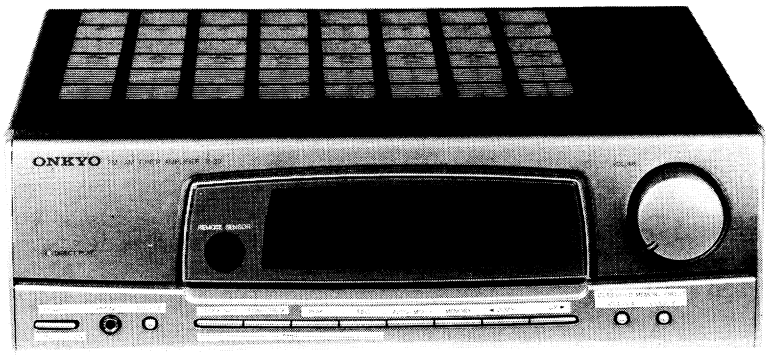
Ref. No. 3431

# ONKYO SERVICE MANUAL

## QUARTZ SYNTHESIZED TUNER AMPLIFIER
## MODEL R-30




**Black and Silver models**

| | |
|---|---|
| MD, MDN, BHMD, BHMDN | 120V AC, 60Hz |
| MP, MPV, MPF, BHMP, BHMPV, BHMPF | 230V AC, 50Hz |
| MW, BHMW | 120 or 220V AC, 50/60Hz |
| MQA, BHMQA | 240V AC, 50Hz |

**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.

## TABLE OF CONTENTS



ONKYO AUDIO COMPONENTS

# SPECIFICATIONS

## Tuner Amplifier R-30

### Amplifier section

| | |
|---|---|
| Power Output: | 30 watts per channel, min. RMS, at 6 ohms, both channels driven, from 40 Hz to 20 kHz, with no more than 0.5 % THD. |
| Musical Power Output: | 2 x 45 watts at 6 ohms, 1 kHz (DIN) |
| Continuous Power Output: | 2 x 32 watts at 6 ohms, 1 kHz (DIN) |
| Total Harmonic Distortion: | 0.5 % at rated power |
| IM Distortion: | 0.5 % at rated power |
| Damping Factor: | 25 at 6 ohms |
| Frequency Response: | 40 – 20,000 Hz ±3 dB (DIRECT) |
| Sensitivity and Impedance: | |
| CD/Tape Play: | 150mV/50 kohms |
| Tape Rec: | 150 mV/3.5 kohms |
| Mono out: | IV, 600 ohms |
| Signal-to-Noise Ratio: | |
| CD/Tape: | 100dB (IHF-A) |
| Phono: | 80dB (IHF-A) |
| Tone Controls: | |
| Super Bass: | +15dB at 45Hz |
| Bass: | ±10dB at 100Hz |
| Treble: | ±10dB at 10kHz |
| Muting: | –45dB |

### Tuner section

**FM:**

| | |
|---|---|
| Tuning Range: | |
| European models: | 87.5 – 108.0MHz (50kHz steps) |
| U.S.A. and Canadian models: | 87.9 – 107.9MHz (200kHz steps) |
| Usable Sensitivity: | |
| Mono: | 11.2 dBf, 1.0µV, 75 ohms<br>0.9µV (S/N 26dB, 40kHz Devi.)<br>75 ohms DIN |
| Stereo: | 18.0dBf, 2.2µV, 75 ohms<br>23µV (S/N 46dB, 40kHz Devi.)<br>75 ohms DIN |
| 50dB Quieting Sensitivity: | |
| Mono: | 18.2dBf, 2.2µV, 75 ohms |
| Stereo: | 37.2dBf, 20µV, 75 ohms |
| Capture Ratio: | 1.5dB |
| Image Rejection Ratio: | 85dB |
| IF Rejection Ratio: | 90dB |
| Signal-to-Noise Ratio: | |
| Mono: | 73dB |
| Stereo: | 66dB |
| Selectivity: | 50dB DIN (±300kHz, 40kHz dev.) |
| AM Suppression Ratio: | 50dB |
| Harmonic Distortion: | |
| Mono: | 0.15% |
| Stereo: | 0.30% |
| Frequency Response: | 30 – 15,000Hz ±1.5dB |
| Stereo Separation: | 40dB at 1kHz |

**AM:**

| | |
|---|---|
| Tuning Range: | |
| European models: | 522 – 1611kHz (9kHz steps) |
| U.S.A. and Canadian models: | 530 – 1710kHz (10kHz steps) |
| Saudi Arabia and Worldwide models: | 531 – 1602kHz (9kHz steps) |
| Usable Sensitivity: | 30µV |
| Image Rejection Ratio: | 40dB |
| IF Rejection Ratio: | 40dB |
| Signal-to-Noise Ratio: | 40dB |
| Harmonic Distortion | 0.8% |

### General

| | |
|---|---|
| Power Supply: | |
| European models: | AC230V, 50Hz |
| U.S.A. and Canadian models: | AC120V, 60Hz |
| U.K. and Australian models: | AC 240V, 50Hz |
| Worldwide models: | 120 and 220V switchable, 50/60Hz |
| Dimensions (W x H x D): | 275 x 85 x 317 mm<br>10 13/16" x 3 3/8" x 12 1/2" |
| Weight: | 4.5kg., 9.9lbs. |

### Remote control transmitter RC-229S

| | |
|---|---|
| Transmitter: | Infrared |
| Signal range: | Approx. 5 meters (16ft. 4") |
| Power supply: | Two "AA"batteries (1.5V x 2) |

# SERVICE PROCEDURES

**1. Replacing the fuses**

For continued protection against fire hazard, replace only with same type and same rating fuse.

| CircuitNo. | PartNo. | Description |
|---|---|---|
| F901 | 252149 | ⚠ 2.5A-TSC, Primary fuse 〈D/W〉 |
| F901 | 252071 | ⚠1.25A-SE-EAK,Primary fuse 〈P/Q〉 |
| F902 | 252071 | ⚠ 1.25A-SE-EAK,AC outlet fuse 〈P〉 |
| F902 | 252071 | ⚠1.25A-SE-EAK, Primary fuse 〈W〉 |

NOTE: 〈D〉 :Only 120V model
〈P〉 :Only 230V model
〈W〉 :Only Worldwide model
〈Q〉 :Only 240V model

**2. Change of FM/AM band step**

With the exception of the Worldwide model,a BAND STEP selector switch is not provided.

(FM)

| BAND STEP | J719 | J720 |
|---|---|---|
| 200kHz→50kHz | Short | Open |
| 50kHz→200kHz | Open | Open |

(AM)

| BAND STEP | J721 |
|---|---|
| 10kHz→ 9kHz | Short |
| 9kHz→10kHz | Open |

—Worldwide model—

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 50kHz(FM)and 9kHz(AM)at the factory, but may have to be reset to 100kHz and 10kHz depending on the area where the unit is used.

| | FM step | AM step |
|---|---|---|
| Europe: | 50kHz | 9kHz |
| U.S.A.: | 200kHz | 10kHz |

**3. Memory preservation**

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

**4. Safety-check out**

(Only U.S.A. model)

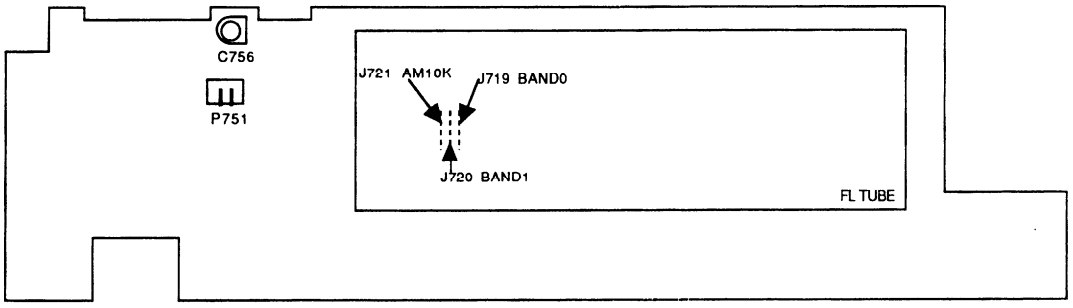
After correcting the original service problem perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and terminal GND on the back panel. Specifications: 3.3 Mohm ±10% at 500V.

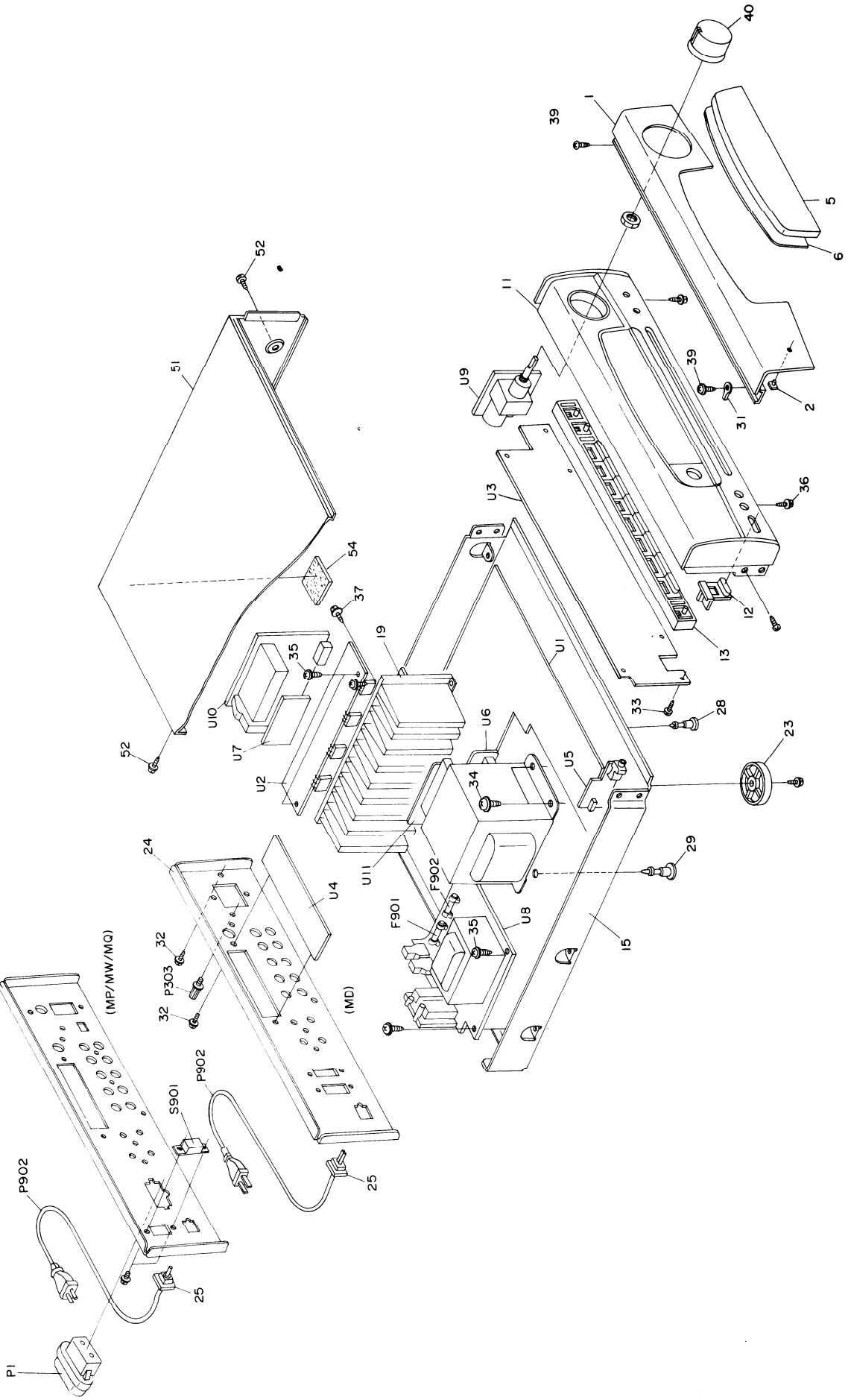
**5. Change of voltage**

Worldwide models are equipped with a voltage selector to conform with local power supplies. This switch is located on the back panel. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

This switch is set to 220V at the factory. Voltage is changed by sliding the groove in the switch with the screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



# EXPLODED VIEW



# PARTS LIST

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 27211430B | Front panel <S> |
| | 27211431B | Front panel <B> |
| 2 | 28198782Y | Facet |
| 5 | 28191632B | Clear plate <S> |
| | 28191633B | Clear plate <B> |
| 6 | 28133286-1 | Back plate <S> |
| | 28133287-1 | Back plate <B> |
| 11 | 27110710BY | Front bracket <S> |
| | 27110711BY | Front bracket <B> |
| 12 | 28324637Y | Knob,power <S> |
| | 28324638Y | Knob,power <B> |
| 13 | 28324639Y | Knob,selector <S> |
| | 28324640Y | Knob,selector <B> |
| 15 | 27100259AY | Chassis |
| 17 | 27150347Y | Shield plate (knob) |
| 19 | 27160312BY | Radiator |
| 23 | 27175252-1AY | Leg |
| 24 | 27121598Y | Rear panel <D> |
| | 27121599Y | Rear panel <P> |
| | 27121623Y | Rear panel <V> |
| | 27121600Y | Rear panel <W> |
| | 27121601AY | Rear panel <Q> |
| 25 | 27300750 | ⚠ Bushing,cord |
| 28 | 27190428A | KGLS-10RT,Holder |
| 29 | 27190524 | KGLS-14RT,Holder |
| 31 | 2061112100 | Cord ass'y |
| 32 | 834430088 | 3TTS+8B(BC),Self-tapping screw |
| 33 | 833426080 | 2.6TTB+8B(BC),Self-tapping screw |
| 34 | 830440089 | 4TTC+8C(BC),Self-tapping screw |
| 35 | 831130088 | 3TTW+8B,Self-tapping screw |
| 36 | 838430088 | 3TTB+8B(BC),Self-tapping screw |
| 37 | 801433 | 3SMS8W.SW+14B(BC),Self-tapping screw |
| 39 | 833430080 | 3TTP+8P(BC),Self-tapping screw |
| 40 | 28324641Y | Knob,volume <S> |
| | 28324642Y | Knob,volume <B> |
| 51 | 28184519Y | Top cover |
| 52 | 838430088 | 3TTB+8B(BC),Self-tapping screw |
| 54 | 28141184 | Cushion |
| 55 | 834230108 | 3TTS+10B(Ni),Nickel self-tapping screw <P/W/Q> |

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| F901 | 252149 | ⚠ 2.5A-TSC,Primary fuse <D/W> |
| | 252071 | ⚠ 1.25A-SE-EAK,Primary fuse <P> |
| F902 | 252071 | ⚠ 1.25A-SE-EAK,Primary fuse <P/W> |
| P303 | 25060044 | Ground terminal |
| P901 | 25050337 | ⚠ NSCT-2P164,AC outlet <P/W> |
| | 25050346 | ⚠ NSCT-2P173,AC outlet <Q> |
| P902 | 253173Y or | ⚠ AS-UC-7#18, |
| | 253142HITSY | ⚠ Power supply cord <D> |
| | 253164Y or | ⚠ AS-CEE, |
| | 253175Y | ⚠ Power supply cord <P/W> |
| | 253170 | ⚠ AS-SAA,Power supply cord <Q> |
| Q505,Q506 | 2202303, | 2SC4512-O, |
| | 2202304 or | 2SC4512-Y or |
| | 2202305 | 2SC4512-P,Power amplifier transistors |
| Q507,Q508 | 2202313, | 2SA1726-O, |
| | 2202314 or | 2SA1726-Y or |
| | 2202315 | 2SA1726-P,Power amplifier transistors |
| S901 | 25065287Y | ⚠ NSS-22113P,Voltage selector switch <W> |
| T901 | 2300812Y | ⚠ NPT-1146D,Power transformer <D> |
| | 2300813Y | ⚠ NPT-1146P,Power transformer <P> |
| | 2300814Y | ⚠ NPT-1146DG,Power transformer <W> |
| | 2300815Y | ⚠ NPT-1146Q,Power transformer <Q> |
| U1 | 1A366538-1 | NAAR-4538-1,Main circuit pc board ass'y <D> |
| | 1A366538-1A | NAAR-4538-1A,Main circuit pc board ass'y <P/Q> |
| | 1A366538-1B | NAAR-4538-1B,Main circuit pc board ass'y <W> |
| U2 | 1A366539-1 | NAAF-4539-1,Main amplifier circuit pc board ass'y |
| U3 | 1A366540-1 | NADG-4540-1,Microprocessor circuit pc board ass'y <D> |
| | 1A366540-1A | NADG-4540-1A,Microprocessor circuit pc board ass'y <P/Q> |
| | 1A366540-1B | NADG-4540-1B,Microprocessor circuit pc board ass'y <W> |
| U4 | 1A366541-1 | NAETC-4541-1,Speaker terminal pc board ass'y <D> |
| | 1A366541-1A | NAETC-4541-1A,Speaker terminal pc board ass'y <P/W/Q> |
| U5 | 1A366542-1 | NASW-4542-1,Headphone terminal pc board ass'y |
| U6 | 1A366543-1 | NAETC-4543-1,Power transformer pc board |
| U7 | 1A366557-1 | NAAF-4557-1,Equalizer amplifier pc board ass'y |

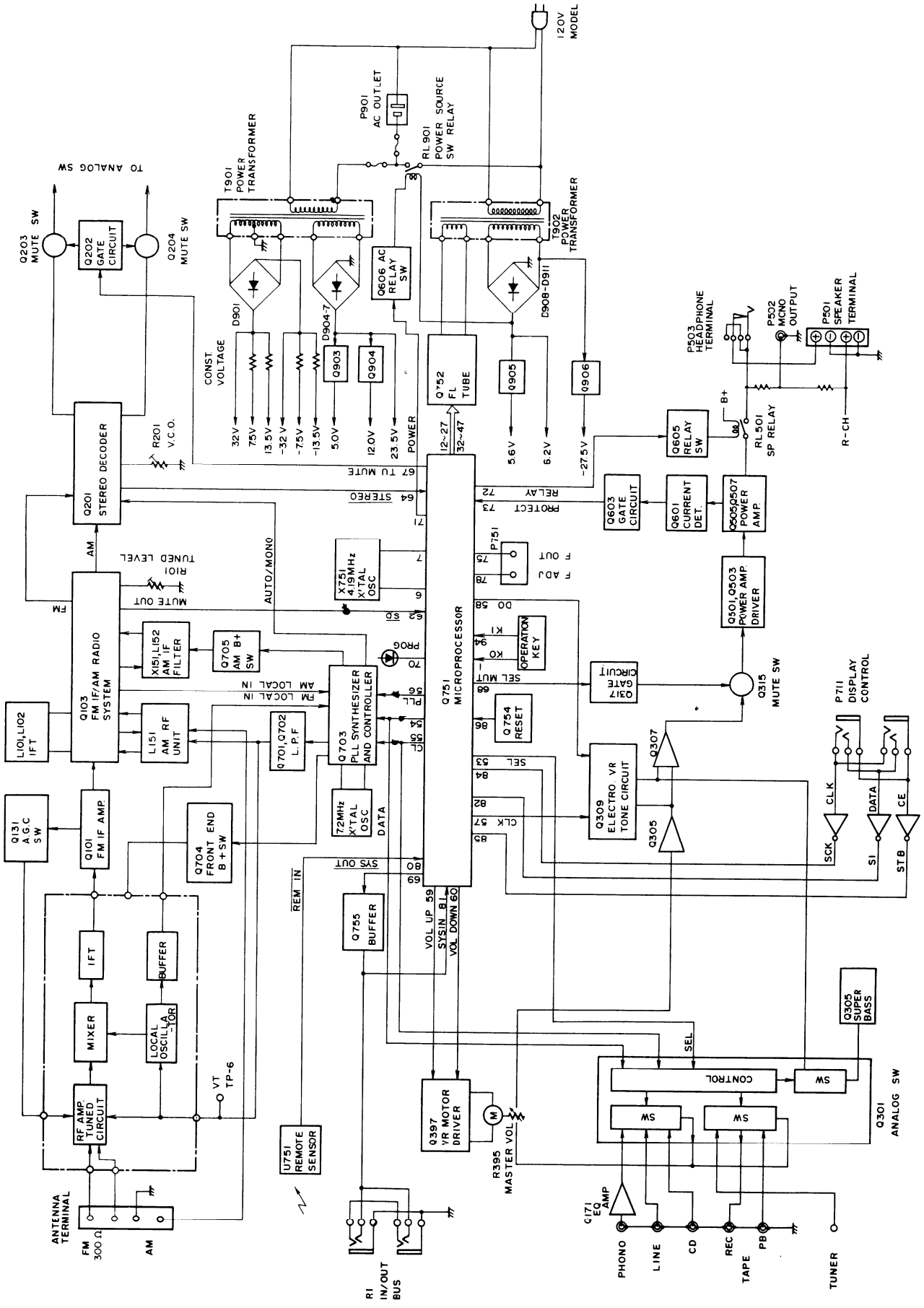
| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| U8 | 1A366544-1 | NAPS-4544-1,Power supply circuit pc board ass'y <D> |
| | 1A366544-1A | NAPS-4544-1A,Power supply circuit pc board ass'y <P> |
| | 1A366544-1B | NAPS-4544-1B,Power supply circuit pc board ass'y <W> |
| | 1A366544-1C | NAPS-4544-1C,Power supply circuit pc board ass'y <Q> |
| U9 | 1A366545-1 | NAAF-4545-1,Volume circuit pc board ass'y |
| U10 | 1A366546-1 | NARF-4546-1,Front end circuit pc board ass'y <D> |
| | 1A366546-1A | NARF-4546-1A,Front end circuit pc board ass'y <P/W/Q> |
| U11 | 1A366547-1 | NAETC-4547-1,Power transformer pc board |

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

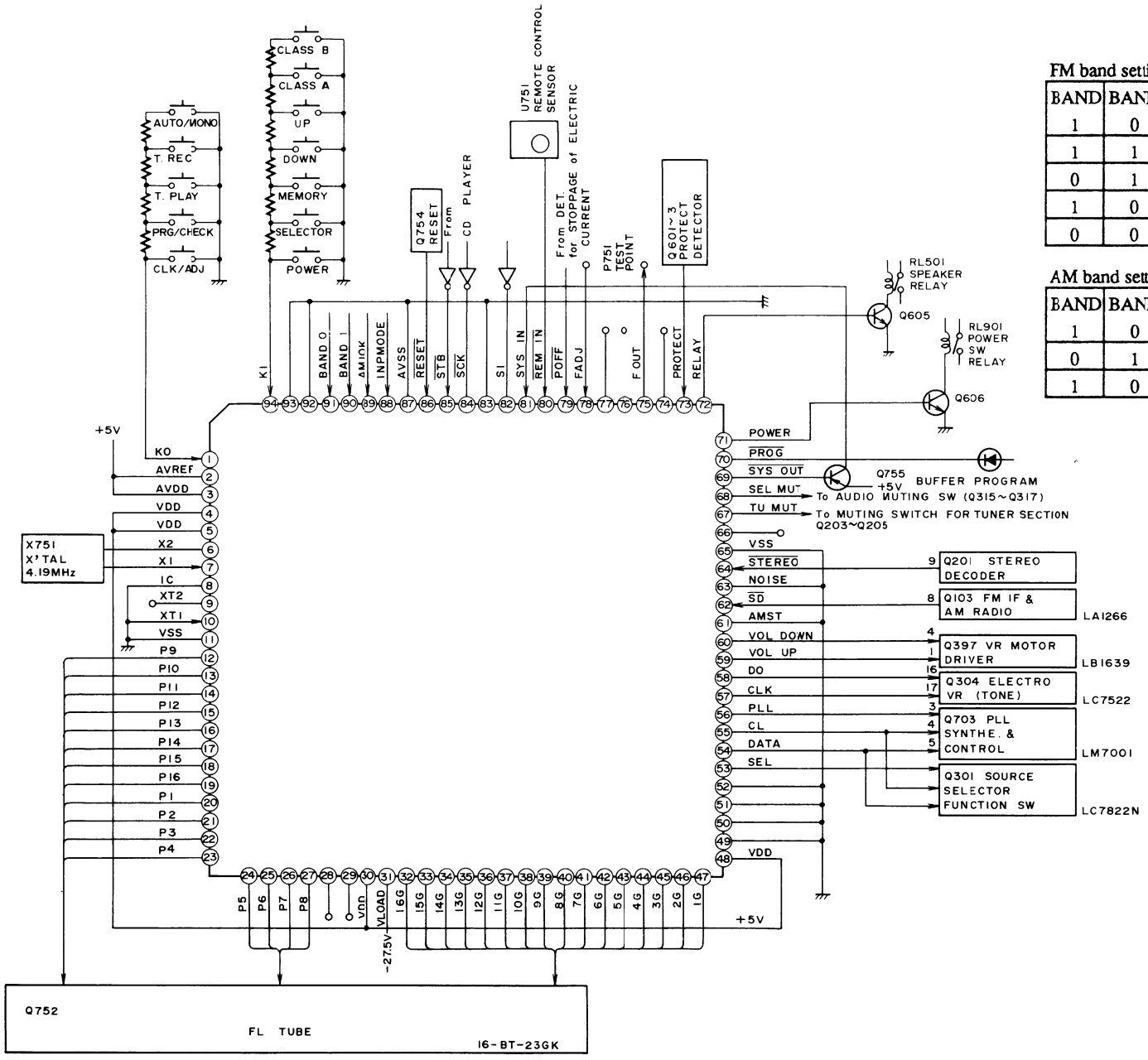
NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

# BLOCK DIAGRAM

## –120V MODEL –



# MICROPROCESSOR CONNECTION DIAGRAM




FM band setting

| BAND 1 | BAND 0 | Region | Frequency Range | Channel space |
|---|---|---|---|---|
| 1 | 0 | U.S.A. | 87.9-107.9MHz | 200kHz |
| 0 | 1 | Europe | 87.50-108.00MHz | 50kHz |
| 1 | 0 | Saudi Arabia | 87.50-108.00MHz | 50kHz |
| 0 | 0 | Japan | 76.0-90.0MHz | 100kHz |

AM band setting

| BAND 1 | BAND 0 | AM 10K | Region | Frequency Range | Channel space |
|---|---|---|---|---|---|
| 0 | 1 | 0 | Europe | 522-1611kHz | 9kHz |
| 1 | 0 | 0 | Saudi Arabia | 531-1602kHz | 9kHz |
| | | 1 | U.S.A. | 530-1710kHz | 10kHz |

# TERMINAL DESCRIPTIONS

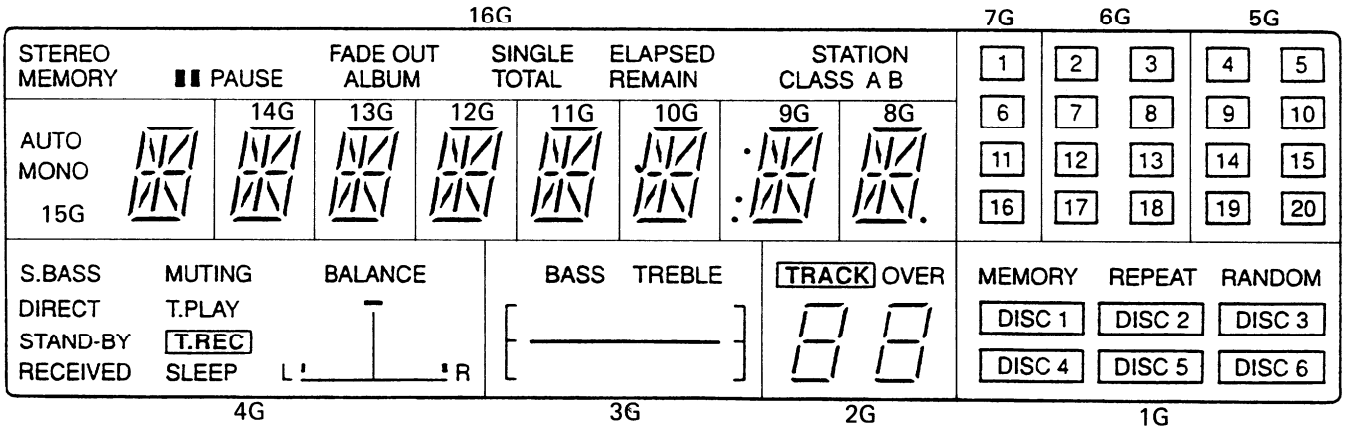
| Pin No. | Symbol | Description |
|---|---|---|
| 1 | K0 | Operation key input terminal |
| 2 | AVREF | Reference voltage input terminal for AD converter |
| 3 | AVDD | Power supply terminal for AD converter (+5V) |
| 4 | VDD | Positive power supply terminal (+5V) |
| 5 | VDD | Positive power supply terminal (+5V) |
| 6 | X2 | Crystal oscillator connection terminals for main system clock. |
| 7 | X1 | Connect the 4.19MHz crystal oscillator. |
| 8 | IC | Internal connection terminal.Connect to the ground. |
| 9 | XT2 | Not used. |
| 10 | XT1 | Not used. Connect to the ground. |
| 11 | VSS | Ground terminal |
| 12~19 | P9~P16 | Segment output terminals |
| 20~27 | P1~P8 | Segment output terminals |
| 28,29 | NC | Not used. |
| 30 | VDD | Positive power supply terminal (+5V) |
| 31 | VLOAD | Pull down resistor connection terminal for controller and driver |
| 32~47 | 16G~1G | Grid output terminals |
| 48 | VDD | Positive power supply terminal (+5V) |
| 49~52 | NC | Not used. |
| 53 | SEL | Connect to the terminal CE of the function switch LC7822N. |
| 54 | DATA | Connect to the terminal DI of the function switch LC7822N and the terminal DATA of PLL IC LM7001. |
| 55 | CL | Connect to the terminal CL of the function switch LC7822N and the terminal CL of PLL IC LM7001. |
| 56 | PLL | Connect to the terminal CE of PLL IC LM7001 . |
| 57 | CLK | Connect to the terminal CLK of the electro volume LC7522. |
| 58 | DO | Connect to the terminal DI of the electro volume LC7522. |
| 59 | VOL UP | Volume control output terminals. |
| 60 | VOL DOWN | |

| Operation | #59 | #60 |
|---|---|---|
| STOP | H | H |
| UP | H | L |
| DOWN | L | H |
| Power off | L | L |

| Pin No. | Symbol | Description |
|---|---|---|
| 61 | NC | Not used. |
| 62 | SD | Broadcast detection input terminal |
| 63 | NOISE | Noise detection terminal.Not used. |
| 64 | STEREO | FM stereo broadcast detection input terminal |
| 65 | VSS | Ground terminal |
| 66 | NC | Not used |
| 67 | TU MUT | Muting output terminal of tuner section |
| 68 | SEL MUT | Muting output terminal of amplifier section |
| 69 | SYS OUT | System code output terminal |
| 70 | PROG | Program indication output terminal |
| 71 | POWER | Power source relay control output terminal |
| 72 | RELAY | Speaker relay control output terminal |
| 73 | PROTECT | Protection circuit operation detection input terminal |
| 74 | NC | Not used. |
| 75 | FOUT | Output terminal for the frequency adjustment of the crystal oscillation |
| 76,77 | NC | Not used. |
| 78 | FADJ | Crystal oscillation adjustment mode input terminal |
| 79 | POFF | Detection input terminal for the stoppage of electric current |
| 80 | REM IN | Remote control signal input terminal |
| 81 | SYS IN | System code input terminal |
| 82 | SI | Serial data input terminal for indication from CD player |
| 83 | NC | Not used. |
| 84 | SCK | Serial clock input terminal for indication from CD player |
| 85 | STB | Strobe signal input terminal of serial data for indication from CD player |
| 86 | RESET | Reset input terminal |
| 87 | AVSS | Reference ground terminal of AD converter |
| 88 | INPMODE | Initializing input terminal for operation mode changeover of input selector |
| 89 | AM10K | Initializing input terminal for the region of AM band setting |
| 90 | BAND1 | Initializing input terminal for the region of FM band setting |
| 91 | BAND0 | Initializing input terminal for the region of FM band setting |
| 92,93 | NC | Not used |
| 94 | K1 | Operation key input terminal |

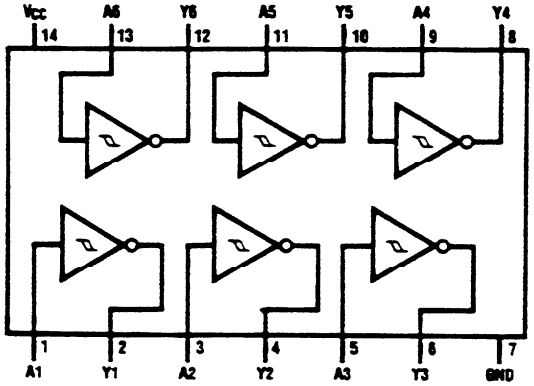
# IC BLOCK DIAGRAMS AND DESCRIPTIONS

## 16–BT–23GK(Fluorescent Indicator Tube)

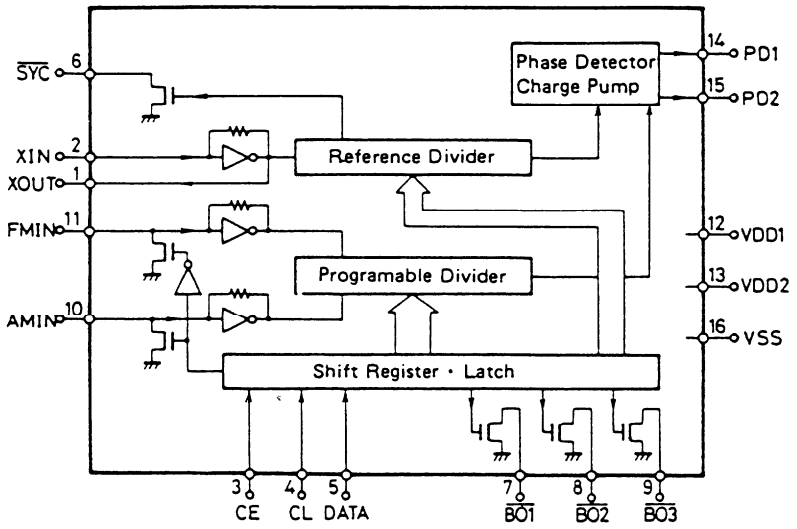



| | 16G | 15G | 14G | 13G | 12G | 11G | 10G | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | STEREO | AUTO | – | – | – | – | – | | – | <1> | <2> | <4> | S.BASS | S2 | TRACK | MEMORY |
| P2 | MEMORY | MONO | – | – | – | – | – | | | <6> | <7> | <9> | DIRECT | B1 | 2a | REPEAT |
| P3 | PAUSE | h | h | h | h | h | h | h | h | <11> | <12> | <14> | STAND-BY | B2 | 2b | RANDOM |
| P4 | FADE OUT | b | b | b | b | b | b | b | b | <16> | <17> | <19> | RECEIVED | B3 | 2f | <DISC1> |
| P5 | ALBUM | m | m | m | m | m | m | m | m | – | <3> | <5> | MUTING | B4 | 2g | <DISC2> |
| P6 | SINGLE | c | c | c | c | c | c | c | c | – | <8> | <10> | T.PLAY | B5 | 2c | <DISC3> |
| 7P | TOTAL | r | r | r | r | r | r | r | r | – | <13> | <15> | T.REC | B6 | 2e | <DISC4> |
| P8 | ELAPSED | p | p | p | p | p | p | p | p | – | <18> | <20> | SLEEP | – | 2d | <DISC5> |
| P9 | REMAIN | a | a | a | a | a | a | a | a | 1 | 2 | 4 | S1 | – | OVER | <DISC6> |
| P10 | STATION | j | j | j | j | j | j | j | j | 6 | 7 | 9 | L3 | B7 | 1a | DISC1 |
| P11 | CLASS | k | k | k | k | k | k | k | k | 11 | 12 | 14 | L2 | B8 | 1b | DISC2 |
| P12 | A | f | f | f | f | f | f | f | f | 16 | 17 | 19 | L1 | B9 | 1f | DISC3 |
| P13 | B | g | g | g | g | g | g | g | g | – | 3 | 5 | R1 | B10 | 1g | DISC4 |
| P14 | C | e | e | e | e | e | e | e | e | – | 8 | 10 | R2 | B11 | 1c | DISC5 |
| P15 | D | n | n | n | n | n | n | n | n | – | 13 | 15 | R3 | B12 | 1e | DISC6 |
| P16 | – | d | d | d | d | d | d | d | d | – | 18 | 20 | – | – | 1d | – |

## TC74HC14AP (Hex Invering Schmitt Trigger)

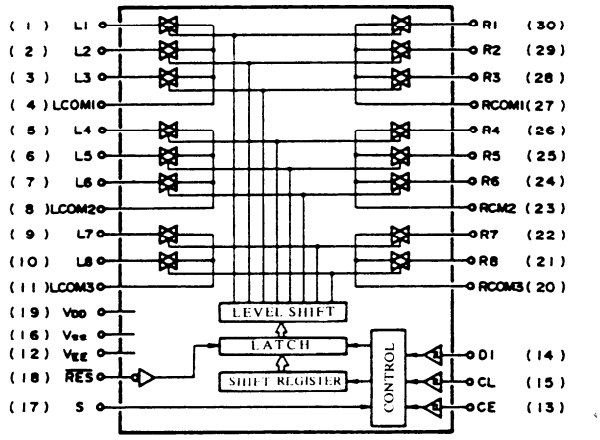


## LM7001 (PLL Synthesizer and Controller)



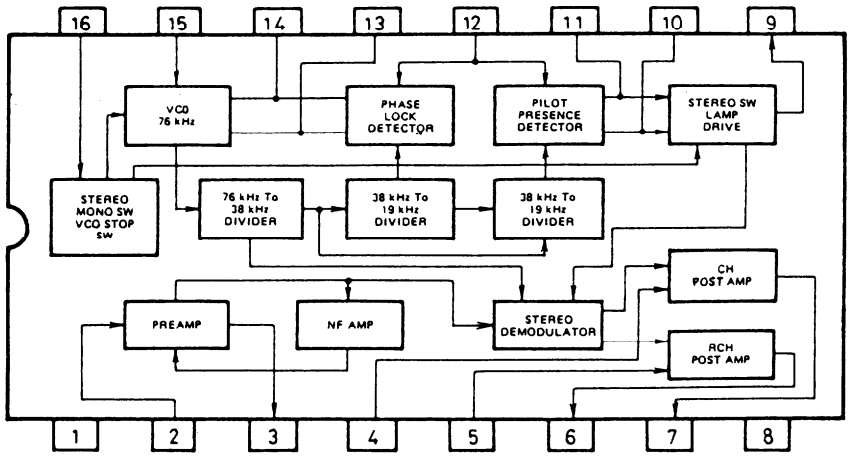

| Pin No. | Terminal | Description |
|---|---|---|
| 1 | XOUT | Connect to the 7.2 MHz crystal oscillator. |
| 2 | XIN | |
| 3 | CE | Chip enable terminal. Connect to the PLL terminal of microprocessor. |
| 4 | CL | Serial clock input terminal. Connect to the CLOCK terminal of microprocessor. |
| 5 | DATA | Serial data input terminal. Connect to the DATA terminal of microprocessor. |
| 6 | $\overline{SYN}$ | Not used. |
| 7 | $\overline{AUTO/MONO}$ | AUTO/MONO selection output terminal. "L" when AUTO. |
| 8 | $\overline{FM}$ | FM band control output terminal. "L" when FM. |
| 9 | $\overline{AM}$ | AM band control output terminal. "L" when AM. |
| 10 | AMIN | AM local oscillator input terminal. |
| 11 | FMIN | FM local oscillator terminal. |
| 12 | $V_{DD}$ 1 | Power supply terminal for back-up. |
| 13 | $V_{DD}$ 2 | Power supply terminal. |
| 14 | PD1 | Charge pump output of the phase detector which constitutes the PLL. High level is output when the divided local oscillator frequency is high than the reference frequency. In the opposite case, low level is output. Floating occurs when the frequencies matched. The output is applied to the variable capacitor diode in the local oscillator through the low pass filters. |
| 15 | PD2 | |
| 16 | $V_{SS}$ | Ground terminal. |

## LC7822N (Analog Switch)

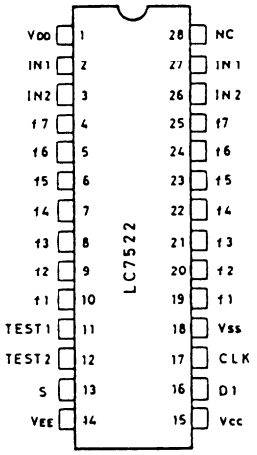


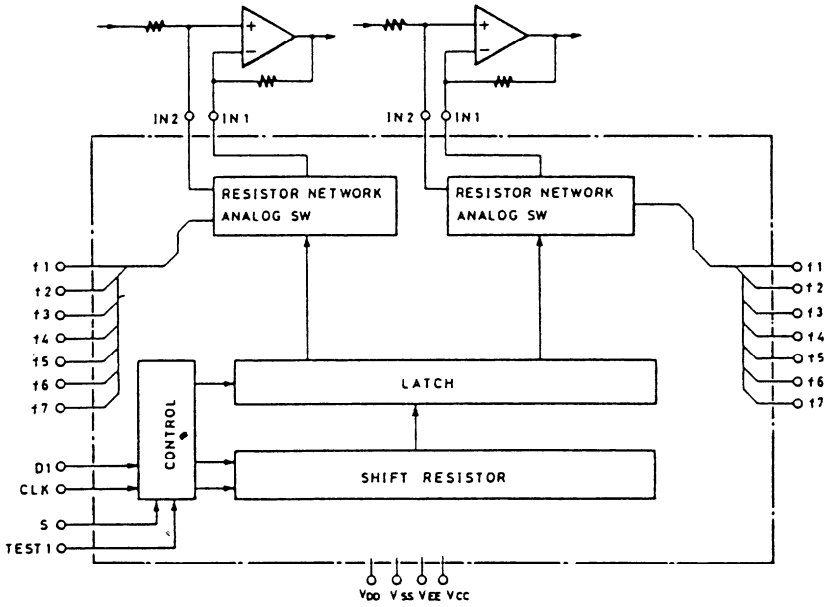

| Pin No. | Terminal | Description |
|---|---|---|
| 1,30 | PHONO | Input/output terminals of analogue switches.<br>Change over the analogue switch at the serial data of microprocessor. |
| 2,29 | LINE | |
| 3,28 | CD | |
| 4,27 | LCOM1 | |
| 5,26 | TUNER | |
| 6,25 | TAPE REC. | |
| 7,24 | TAPE PLAY | |
| 8,23 | LCOM2 | |
| 9,22 | S.BASS | |
| 10,21 | | |
| 11,20 | LCOM3 | |
| 12 | VEE | Negative power supply terminal.(-15V) |
| 13 | CE | Chip enable terminal.Connect to the terminal PLL of the microprocessor. |
| 14 | DI | Serial data input terminal.Connect to the terminal DATA of the microprocessor. |
| 15 | CL | Serial clock terminal.Connect to the terminal CL of the microprocessor. |
| 16 | Vss | Ground terminal. |
| 17 | S | Select terminal. |
| 18 | RES | Reset terminal. |
| 19 | VDD | Power supply terminal.(+5V) |

## AN7470 (FM Stereo Decoder)



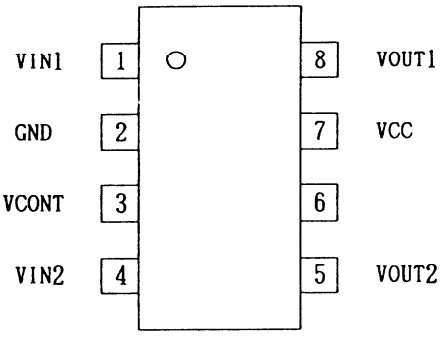
## LC7522 (Electro Volume)



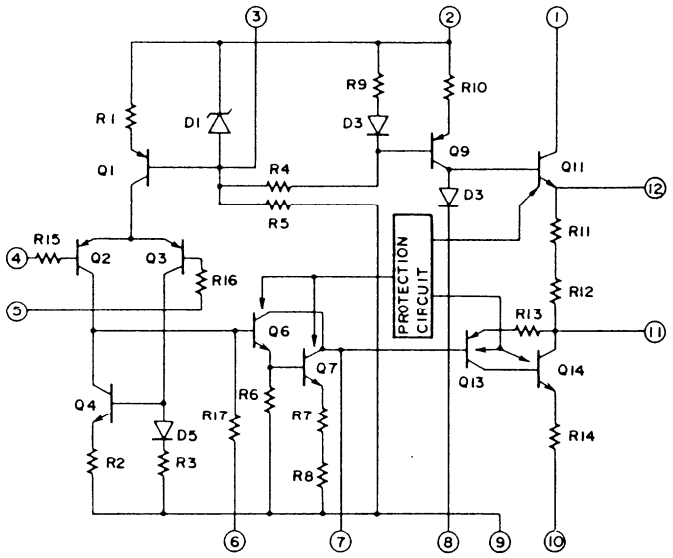

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | VDD | Positive power supply for audio signal. |
| 2,27 | IN1 | Audio signal input terminal. |
| 3,26 | IN2 | Audio signal input terminal. |
| 4～10<br>19～25 | f1～f7 | Band pass filter connection terminal. |
| 11 | TEST1 | Test terminal. |
| 12 | TEST2 | |
| 13 | S | Selector terminal. |
| 14 | VEE | Negative power supply for audio signal. |
| 15 | VCC | Power supply terminal. |
| 16 | DI | Data input terminal from the microprocessor. |
| 17 | CLK | Clock input terminal from the microprocessor. |
| 18 | VSS | Ground terminal. |

## LB1639 (Volume Motor Drive)

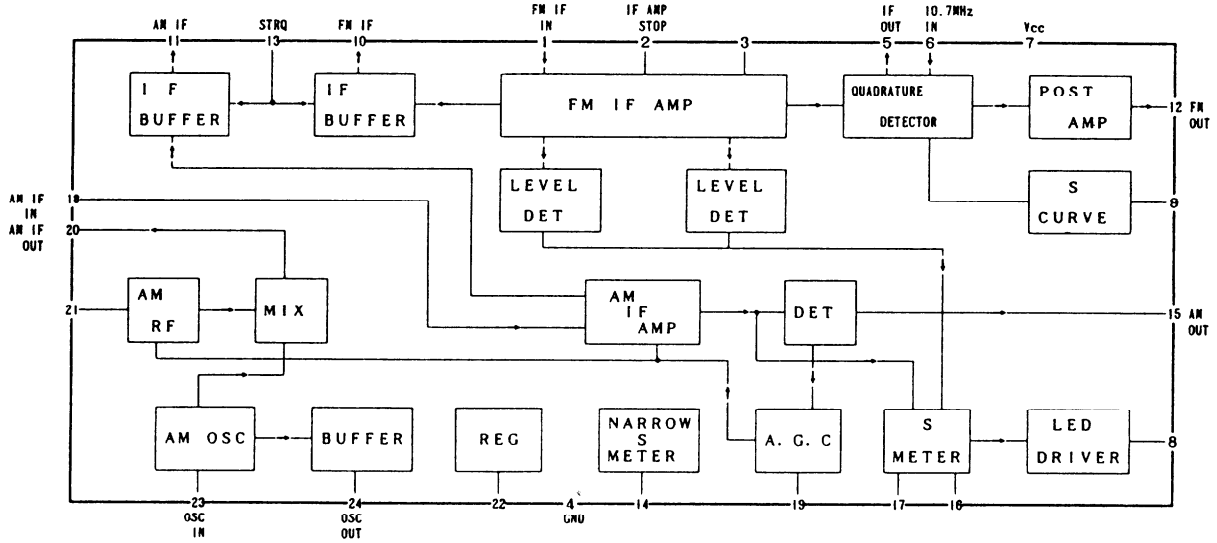



| VIN1 | VIN2 | VOUT1 | VOUT2 | |
|---|---|---|---|---|
| H | L | H | L | CD |
| L | H | L | H | CCD |
| H | H | OFF | OFF | STOP |
| L | L | OFF | OFF | STOP |

## μPC1225H (Power Amplifier Driver)



## LA1266 (FM IF and AM Radio System)




# ADJUSTMENT PROCEDURES

**Preparation**

- **Input**

FM mono: 1kHz, 75kHz devi., 60dB/$\mu$V
FM stero: 1kHz, L+R 67.5kHz devi.: Pilot signal 19kHz 7.5kHz devi.
AM: 400Hz, 30% mod.,

- **Output**

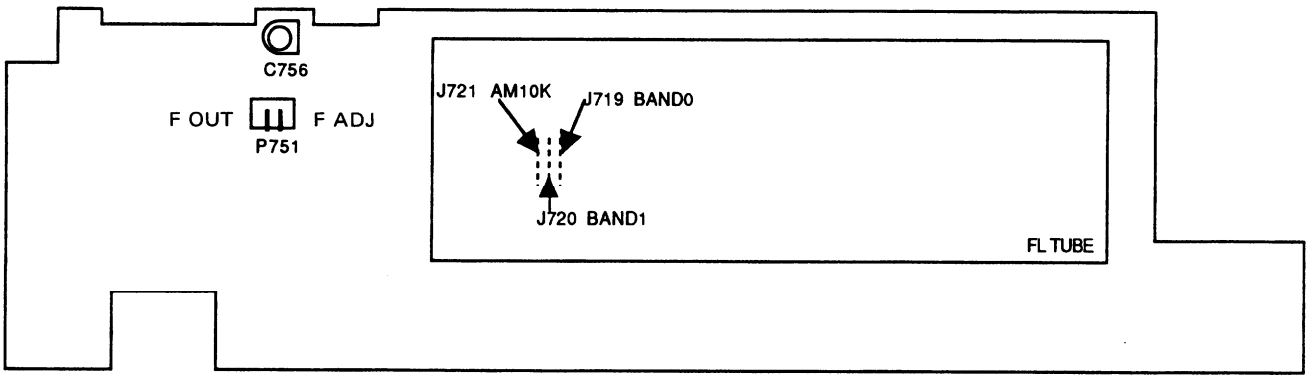
Connect the non-inductive type resistor of 8 ohms to the speaker terminal A of left and right channels unless otherwise noted.

- **Standard knob position**

Input selector ..... CD
VOLUME ..... Maximum
BASS/TREBLE .....CENTER

### Clock Frequency adjustment

Set the input selector switch to FM.
Set the tuning to 99.1 MHz.
Short between terminals +B and FADJ with the short clip, and connect the frequency counter to terminal F-OUT.
Adjust C756 so that the counter reading becomes 1,048,576 ±3Hz. (NOTE:+B=+5V line)
After adjustment, disconnect the short clip and frequency counter.



## ion

| | Step | Connection of instrument | FM SG output | Stereo modulator output | Turning dial setting | Output indicator | Adjustment | Adjust for | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | Fig. 1 | 99.1MHz<br>1kHz, 75kHz devi.<br>65dBf (60dB) | – | 99.1MHz | DC voltmeter | L101 | 0V ± 30mV | Mode switch: MONO<br>Repeat the steps 1 and 2 until no further adjustment is necessary |
| | 2 | | | | | Distortion analyzer | L102 | Minimum | |
| ED<br>level | 1 | Fig. 3 | 99.1MHz<br>17.2dBf(12dB) (120V model)<br>19.2dBf (14dB) (Other models) | – | 99.1MHz | Oscilloscope | R101 | Output | Mode switch: AUTO<br>Remove R102 when this adjustment can not. |
| | 2 | | 99.1MHz<br>16.2dBf(11dB) (120V model)<br>18.2dBf(14dB) (Other models) | | | | | No output | |
| ) | | Fig. 2 | 98.00MHz<br>1KHz, 75kHz devi.<br>65dBf(60dB) | – | 98.00MHz | Frequency counter | R201 | 19kHz ± 10Hz | Mode switch STEREO |
| ion | | Fig. 3 | 98.00MHz<br>65dB (60dB)<br>Ext. modulation | L or Rch. 1kHz | 98.00MHz | Distortion analyzer | IF on the front end | Minimum | Don't turn more than ±180° |

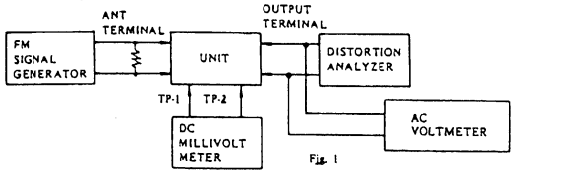
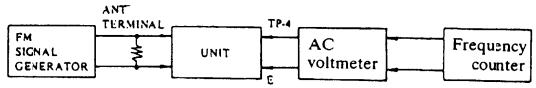


Fig. 1



Use the high impedance probe. (10 : 1)

Fig. 2

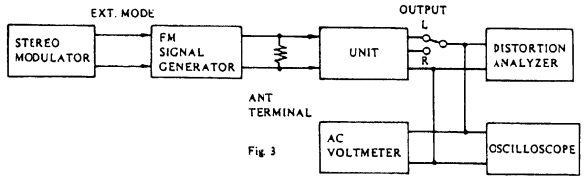
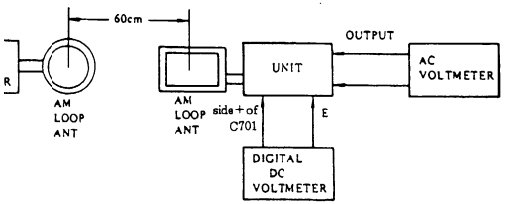


Fig. 3

## tion

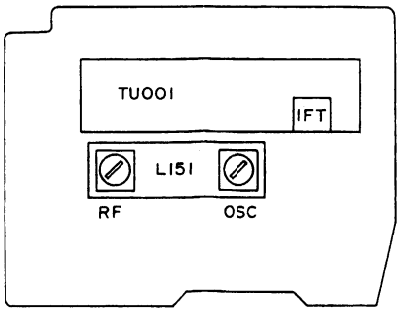
| AM SG output | Tuned frequency | Output indicator | Adjustment point | Adjust for |
|---|---|---|---|---|
| | 522kHz (530kHz) | Digital DC voltmeter | OSC on RF block (L151) | 1.3V ± 0.1V |
| 603kHz (600kHz)<br>400Hz 30% mod.<br>60dB/m | 603kHz (603kHz) | AC voltmeter | RF on RF block (L151) | Maximum |
| 999kHz (990kHz)<br>400Hz 30% mod.<br>60dB/m | 999kHz (999kHz) | AC voltmeter | L152 | Maximum |

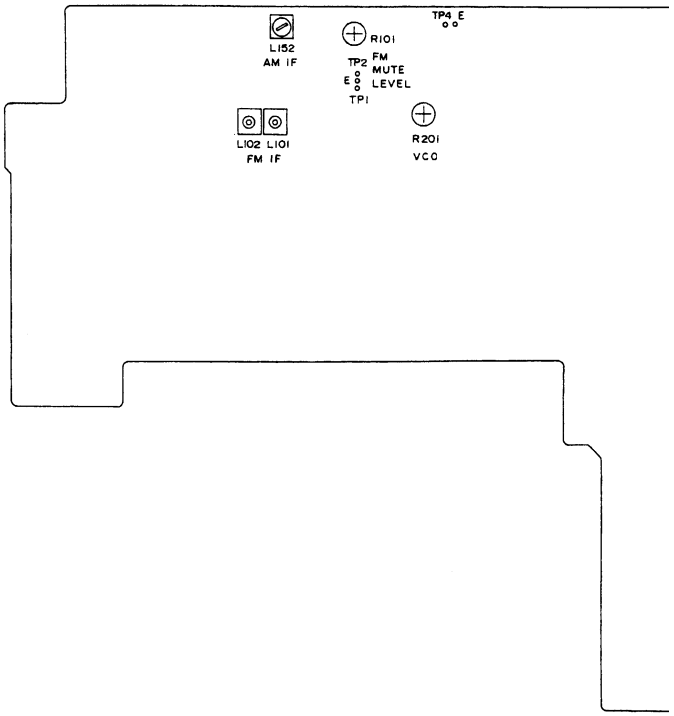
( ) : 120V model




Reference specifications

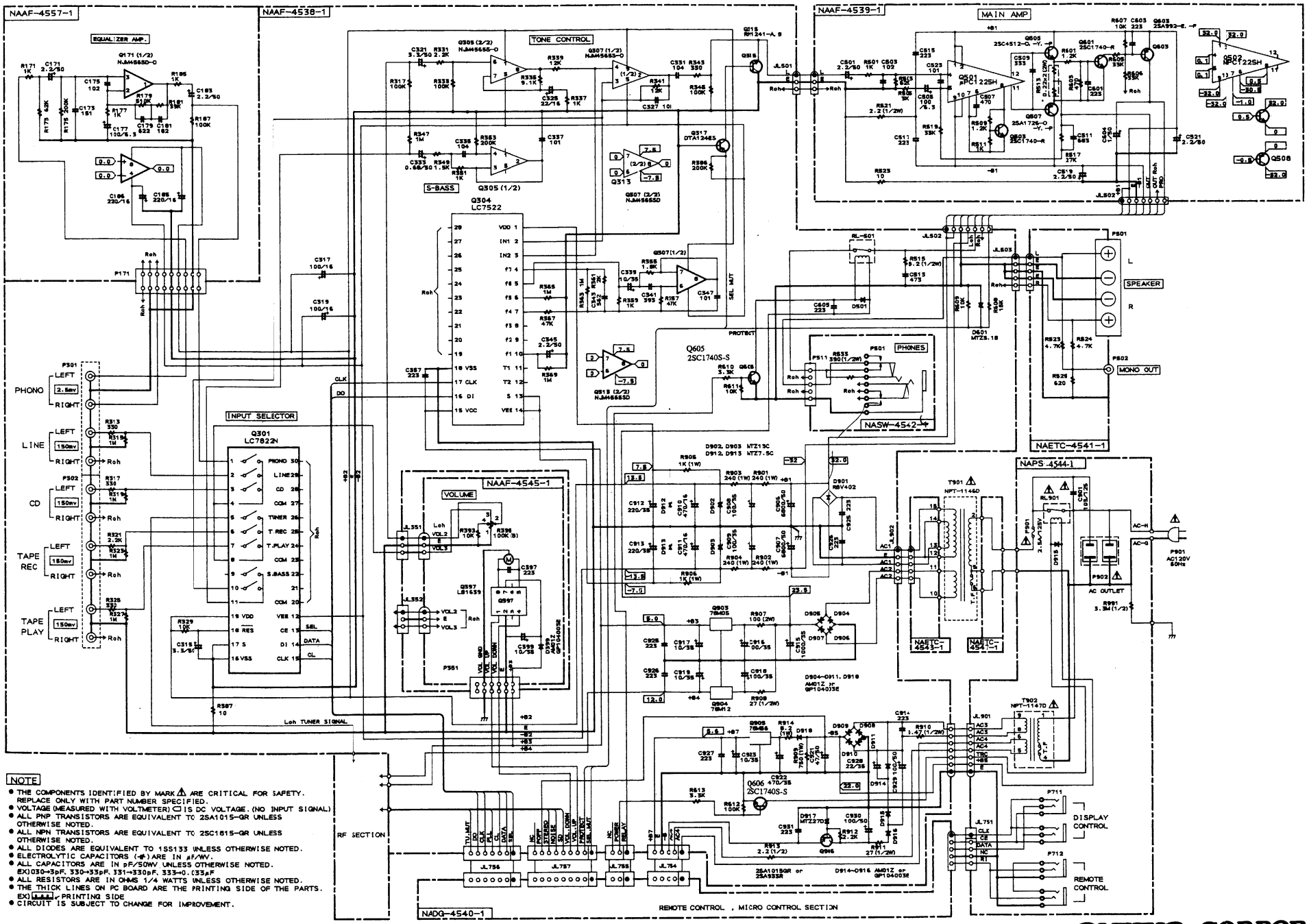
| | | |
|---|---|---|
| FM Tuned voltages (Side + of C701 and ground) | 87.50MHz 1.6±0.5V<br>108.00MHz 8.0±0.5V | 50kHz step models |
| | 87.9MHz h6±0.5V<br>107.9MHz 8.0±0.5V | 200kHz step models |
| Auto stop level | AM: Less than 68dB/m<br>FM: Less than 18 dBμ | |
| AM Tuned voltage | 522kHz 1.3±0.5V<br>1611kHz 7.2±0.5V | 9kHz step models |
| | 530kHz 1.3±0.5V<br>1710kHz 7.6±0.5V | 10kHz step models |



# IEMATIC DIAGRAM

V MODEL –

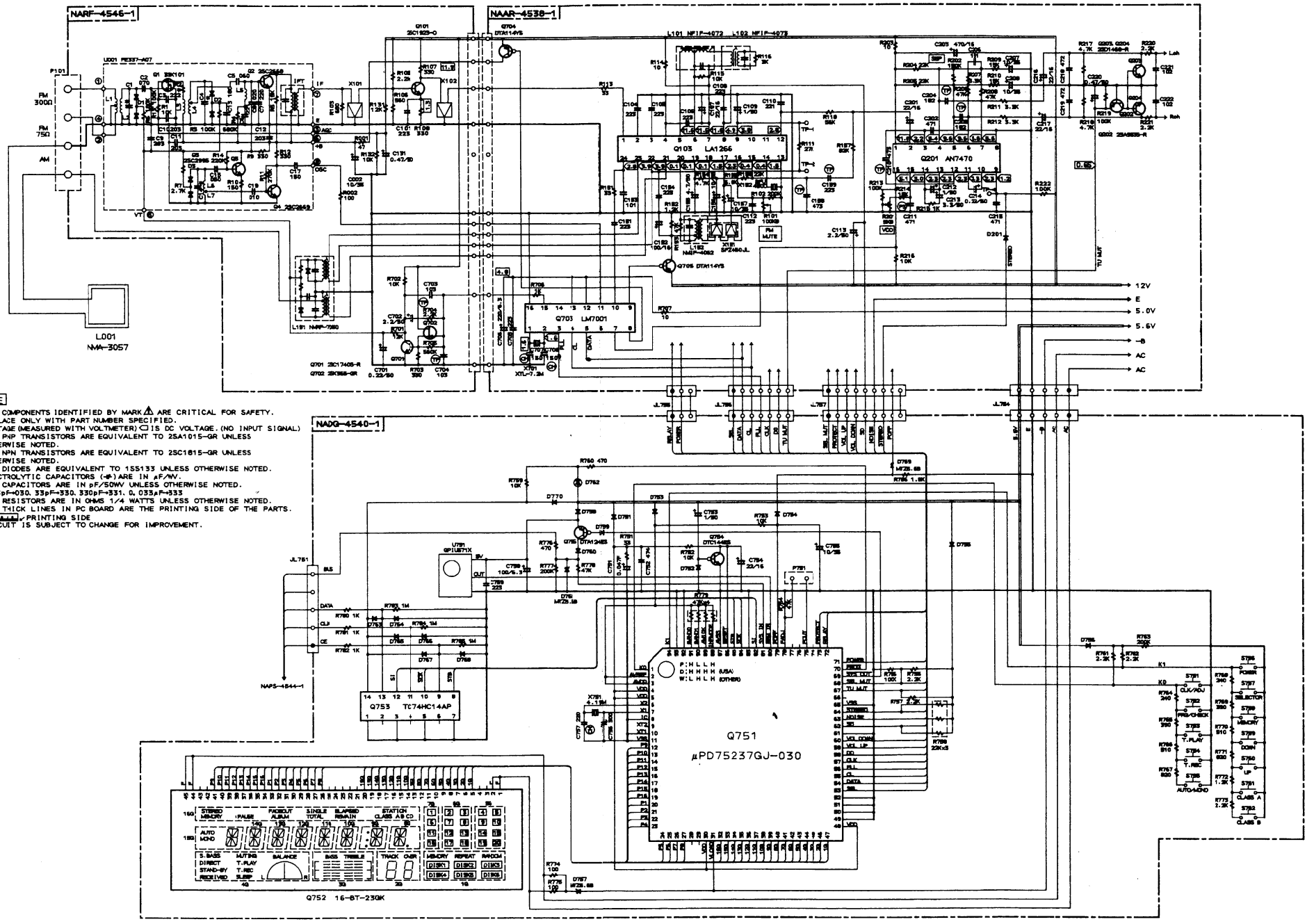



NOTE

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

# EMATIC DIAGRAM

MODEL –




NOTE

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

# PRINTED CIRCUIT BOARD PARTS LIST

MAIN CIRCUIT PC BOARD(NAAR-4538-1/1A/1B)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | ICs | |
| Q103 | 22240039 | LA1266 |
| Q201 | 22240242 | AN7470 |
| Q301 | 22240270 | LC7822N |
| Q304 | 22240219 | LC7522 |
| Q305-Q308 | 22240273 | NJM4565S-D |
| Q703 | 22240090 | LM7001 |
| Q903 | 222780055 | 78M05HF |
| Q904 | 222780125 | 78M12HF |
| Q905 | 222780565JRC | 78M56 |
| | Transistors | |
| Q102 | 2210746 | 2SC945A-P <P/W/Q> |
| Q202 | 2213354 | 2SA933S-R |
| Q203,Q204 | 2212794 | 2SD1468-R |
| Q315,Q316 | 2213631 or | RN1241-A or |
| | 2213632 | RN1241-B |
| Q317 | 2212600 | DTA124ES |
| Q605,Q606 | 2213285 | 2SC1740S-S |
| Q704,Q705 | 2213090 | DTA114YS |
| Q906 | 2213354 | 2SA933S-R |
| | Diodes | |
| D201,D501 | 223163 | 1SS133 |
| D601 | 224450512 | MTZ5.1B |
| D901 | 22380022 | RBV402 |
| D902,D903 | 224451303 | MTZ13C |
| D904-D911 | 22380046 or | AM01Z or |
| D914-D916 | 22380035 | GP104003E |
| D912,D913 | 224450753 | MTZ7.5C |
| D917 | 224452704 | MTD27D |
| D918 | 22380046 or | AM01Z or |
| | 22380035 | GP104003E |
| | Coils and Transformers | |
| L101 | 233401 | NMIF-4072 |
| L102 | 233402 | NMIF-4073 |
| L103 | 233383 | NMC-6070 <P/W/Q> |
| L152 | 232139 | NMIF-4062 |
| L201,L202 | 233355A | NMC-4059 <P/W/Q> |
| | Relay | |
| RL501 | 25065339 | NRL-2P5A-DC24-046 |
| | Ceramic filters | |
| X103 | 3010137 | SFE10.7MMK <P/W/Q> |
| X151 | 3010123 | SFZ450JL |
| X152 | 3010076 | BFU450C |
| | X'tal | |
| X701 | 3010141 or | XTL7.2M |
| | 3010158 | |
| | Capacitors | |
| C107,C201 | 354742209 | 22 μ F,16V,Elect. |
| C109,C212 | 354780109 | 1 μ F,50V,Elect. |
| | Capacitors | |
| C113 | 354780229 | 2.2 μ F,50V,Elect. |
| C152 | 354741019 | 100 μ F,16V,Elect. |
| C155 | 354780479 | 4.7 μ F,50V,Elect. |
| C156,C157 | 354761009 | 10 μ F,35V,Elect. |
| C158 | 374724734 | 0.047 μ F±5%,50V,Plastic |
| C159 | 374722234 | 0.022 μ F±5%,50V,Plastic |
| C203 | 354744719 | 470 μ F,16V,Elect. |
| C204,C205 | 374721824 | 1800pF±5%,50V,Plastic <D> |
| | 374721224 | 1200pF±5%,50V,Plastic <P/Q> |
| | 374721524 | 1500pF±5%,50V,Plastic <W> |
| C207,C208 | 354761009 | 10 μ F,35V,Elect. |
| C210 | 374724734 | 0.047 μ F±5%,50V,Plastic |

| CIRCUIT NO. | PART NO. | DESCRIPTIUON |
|---|---|---|
| C211 | 370134714 | 470pF±5%,100V,Plastic |
| C213,C315 | 354780339 | 3.3 μ F,50V,Elect. |
| C214 | 354782299 | 0.22 μ F,50V,Elect. |
| C216,C217 | 354742209 | 22 μ F,16V,Elect. |
| C220 | 354784799 | 0.47 μ F,50V,Elect. |
| C317,C319 | 354741019 | 100 μ F,16V,Elect. |
| C321,C322 | 354780339 | 3.3 μ F,50V,Elect. |
| C325,C326 | 354742209 | 22 μ F,16V,Elect. |
| C331,C332 | 374721044 | 0.1 μ F±5%,50V,Plastic |
| C333,C334 | 354786899 | 0.68 μ F,50V,Elect. |
| C335,C336 | 374721044 | 0.1 μ F±5%,50V,Plastic |
| C339,C340 | 354761009 | 10 μ F,35V,Elect. |
| C341,C342 | 374723934 | 0.039 μ F±5%,50V,Plastic |
| C343,C344 | 374725624 | 5600pF±5%,50V,Plastic |
| C345,C346 | 354780229 | 2.2 μ F,50V,Elect. |
| C513,C514 | 374724734 | 0.047 μ F±5%,50V,Plastic |
| C706 | 354722219 | 220 μ F,6.3V,Elect. |
| C906,C907 | 3504207 | 6800 μ F,50V,Elect. |
| C908,C909 | 354761019 | 100 μ F,35V,Elect. |
| C910,C911 | 354744719 | 470 μ F,16V,Elect. |
| C912,C913 | 354742219 | 220 μ F,16V,Elect. |
| C915 | 354761029 | 1000 μ F,35V,Elect. |
| C916,C918 | 354761019 | 100 μ F,35V,Elect. |
| C917,C919 | 354761009 | 10 μ F,35V,Elect. |
| C921 | 354784709 | 47 μ F,50V,Elect. |
| C922 | 354764719 | 470 μ F,35V,Elect. |
| C923 | 354761009 | 10 μ F,35V,Elect. |
| C928 | 354762209 | 22 μ F,35V,Elect. |
| C929,C930 | 354781019 | 100 μ F,50V,Elect. |
| | Resistors | |
| R101 | 5210070 or | N06HR100KBD, |
| | 5210221 | Semi-fixed |
| R201 | 5210062 or | N06HR4.7KBD or |
| | 5210216 | N06HR5KBD,Semi-fixed |
| R515,R516 | 442520824 | 8.2Ω ±5%,1/2W,Metal oxide film |
| R901-R904 | 441622414 | 240Ω ±5%,1W,Metal oxide film |
| R905,R906 | 441621024 | 1kΩ ±5%,1W,Metal oxide film |
| | Resistors | |
| R907 | 441721014 | 100Ω ±5%,2W,Metal oxide film |
| R908,R911 | 442522704 | 27Ω ±5%,1/2W,Metal oxide film |
| R909 | 441627514 | 750Ω ±5%,1W,Metal oxide film |
| R910 | 442524794 | 0.47Ω ±5%,1/2W,Metal oxide film |
| R913 | 442520224 | 2.2Ω ±5%,1/2W,Metal oxide film |
| R914 | 441620824 | 8.2Ω ±5%,1W,Metal oxide film |
| | Terminals | |
| P301 | 25045303 | NPJ-4PDBL162 |
| P302 | 25045300 | NPJ-6PDBL159 |
| | Sockets | |
| JL351a,JL352a | 25050267 | NSCT-3P95 |
| JL754a | 25050527 | NSCT-5P350 |
| JL755a | 25050525 | NSCT-3P348 |
| JL756a | 25050529 | NSCT-7P352 |
| JL757a | 25050531 | NSCT-9P354 |
| | Plugs | |
| P111a,P112a | 25055258 | NPLG-6P241 |
| P351a | 25055497 | NPLG-6P472 |
| | 25055038 | NPLG-2P29 |
| | 25055042 | NPLG-3P32 |
| | Switch | |
| S701 | 25065414 | NSS-22155 <W> |

CAUTION:Replacement for transistor of mark ☆,if necessary, must be made from the same beta group ($H_{FE}$) as the original type.

MAIN AMPLIFIER CIRCUIT PC BOARD(NAAF-4539-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | ICs | |
| Q501,Q502 | 22240108 | μPC1225H |
| | Transistors | |
| Q503,Q504 | 2213284 | 2SC1740S-R |
| Q505,Q506 | 2202303, | ☆ 2SC4512-O, |
| | 2202304 or | ☆ 2SC4512-Y or |
| | 2202305 | ☆ 2SC4512-P |
| Q507,Q508 | 2202313, | ☆ 2SA1726-O, |
| | 2202314 or | ☆ 2SA1726-Y or |
| | 2202315 | ☆ 2SA1726-P |
| Q601,Q602 | 2213284 | 2SC1740S-R |
| Q603 | 2211792 or | 2SA992-F or |
| | 2211793 | 2SA992-E |
| | Capacitors | |
| C501,C502 | 354780229 | 2.2μF,50V,Elect. |
| C505.C506 | 354721019 | 100μF.6.3V.Elect. |
| C509,C510 | 374723334 | 0.033μF±5%,50V,Plastic |
| C511,C512 | 374726834 | 0.068μF±5%,50V,Plastic |
| C519,C521 | 354780229 | 2.2μF,50V,Elect. |
| C604 | 354780109 | 1μF,50V,Elect. |
| | Resistors | |
| R513,R514 | 45000131 | 0.22Ω ±5%,Metal plate |
| R521 | 442520224 | 2.2Ω ±5%,1/2W,Metal oxide film |

MICROPROCESSOR CIRCUIT PC BOARD(NADG-4540-1/1A/1B)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | Opto. receivng module | |
| U751 | 24130007 | GP1U571X |
| | FL tube | |
| Q752 | 212114 | 16-BT-23GK |
| | ICs | |
| Q751 | 22240633Y | μPD75237GL-030 |
| Q753 | 222740145TOS | TC74HC14AP |
| | Transistors | |
| Q754 | 221282 | DTC144ES |
| Q755 | 2212600 | DTA124ES |
| | Diodes | |
| D751-D756 | 223163 | 1SS133 |
| D757,D761 | 224450562 | MTZ5.6B |
| D758-D760 | 223163 | 1SS133 |
| D762 | 225141 | SEL2213C |
| D763-D768 | 223163 | 1SS133 |
| D769 | 224450562 | MTZ5.6B |
| D770 | 223163 | 1SS133 |
| | X'tal | |
| X751 | 3010121A | XTL-4.19M |
| | Capacitors | |
| C751 | 3000060 | 0.047F,5.5V,Super |
| C752 | 375524744 | 0.47μF±5%,50V,Plastic |
| C753 | 354780109 | 1μF,50V,Elect. |
| C754 | 354742209 | 22μF,16V,Elect. |
| C755 | 354761009 | 10μF,35V,Elect. |
| C756 | 3060029 | NTC-30P25,Trimmer |
| C758 | 354721019 | 100μF,6.3V,Elect. |
| | Resistors | |
| R758 | 49163223403 | 22kΩ ×3,1/10W,Array |
| R779 | 49163473404 | 47kΩ ×4,1/10W,Array |
| | Switches | |
| S751-S762 | 25035548 | NPS-111-S510 |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | Plug | |
| P751 | 25055495 | NPLG-2P470 |
| | Holders | |
| | 27190893Y | FL |
| | 27190811Y | LED |
| | Bracket | |
| | 27141575 | RI |

SPEAKER TERMINAL PC BOARD(NAETC-4541-1/1A)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| P501 | 25060116 | NTM-4PDML050,Terminal,speaker |
| P502 | 25045302 | NPJ-1PDBL161,Terminal,MONO OUT |

HEADPHONE TERMINAL PC BOARD(NASW-4542-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| R533,R534 | 442523914 | 390Ω ±5%,1/2W,Metal oxide film resistor |
| P501 | 25045372 | LGS6517-0202,Headphone terminal |
| P511 | 25055319 | NPLG-5P302,Plug |

POWER SUPPLY CIRCUIT PC BOARD(NAPS-4544-1/1A/1B/1C)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| C901 | 3500065A | ⚠ DE7150FZ103PAC400V/125V,IS capacitor |
| C901a | 27301216 | ⚠ SB1925A,Cover,capacitor <P/W/Q> |
| D915 | 223163 | 1SS133,Diode |
| F901 | 252149 | ⚠ 2.5A-TSC,Primary fuse <D/W> |
| | 252071 | ⚠ 1.25A-SE-EAK,Primary fuse <P/Q> |
| F901a | 25050065 | ⚠ YSH-403T,Fuseholder |
| F901b | 29360626-1Y | Rating label,fuse <D> |
| | 29360606 | Rating label,fuse <P/W/Q> |
| F902 | 252071 | ⚠ 1.25A-SE-EAK,Primary fuse <P/W> |
| F902a | 25050065 | ⚠ YSH-403T,Fuseholder <P/W> |
| JL751a | 25050527 | NSCT-5P350,Socket |
| JL901a | 25050271 | NSCT-7P99,Socket |
| P711 | 25045330 | HSJ-2PDBL184,Terminal RI |
| P712 | 25045370 | HSJ-2PDGR213,Terminal,CD display |
| P901 | 25050409 | ⚠ NSCT-4P234,AC outlet <D> |
| R991 | 431523355 | ⚠ 3.3MΩ,1/2W,Solid resistor <D> |
| RL901 | 25065357Y | ⚠ NRL-1P5A-DC24-051,Relay <D> |
| | 25065341Y | ⚠ NRL-1P15A-DC24-047,Relay <P/W/Q> |
| T902 | 2300816Y | ⚠ NPT-1147D,Power transformer <D> |
| | 2300817Y | ⚠ NPT-1147P,Power transformer <P> |
| | 2300818Y | ⚠ NPT-1147DG,Power transformer <W> |
| | 2300819Y | ⚠ NPT-1147Q,Power transformer <Q> |

VOLUME CIRCUIT PC BOARD(NAAF-4545-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| Q399 | 22240322 | LB1639,IC |
| D399 | 22380046 or | AM01Z or |
| | 22380035 | GP104003E,Diode |
| C399 | 354761009 | 10μF,35V,Elect. capacitor |
| R395 | 5142009Y | N16RGM100KBT20F,Variable resistor |
| P351 | 25050444 | NSCT-6P268,Socket |

FRONT END CIRCUIT PC BOARD(NARF-4546-1/1A)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| U001 | 240088 | FE337-A07,Front end <D> |
| | 240089 | FE415-G11,Front end <P/W/Q> |
| Q101 | 2211723 | 2SC1923-O,Transistor |
| Q131 | 2213284 | 2SC1740S-R,Transistor <P/W/Q> |
| Q701 | 2213284 | 2SC1740S-R,Transistor |
| Q702 | 2212445 | 2SK365-GR,F.E.T |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| D131,D132 | 223132 | 1K60,Diode <P/W/Q> |
| L151 | 232148 | NMRF-7050,RF block |
| X101,X102 | 3010071 | SFE10.7MA5,Ceramic filter <D> |
| | 3010137 | SFE10.7MMK,Ceramic filter <P/W/Q> |
| C002 | 354761009 | 10 $\mu$ F,35V,Elect. capacitor |
| C131 | 354784799 | 0.47 $\mu$ F,50V,Elect. capacitor |
| C132 | 354742209 | 22 $\mu$ F,16V,Elect. capacitor <P/W/Q> |
| C701 | 354782299 | 0.22 $\mu$ F,50V,Elect. capacitor |
| C702 | 354780229 | 2.2 $\mu$ F,50V,Elect. capacitor |
| C703,C704 | 374721034 | 0.01 $\mu$ F±5%,50V,Plastic capacitor |
| C704 | 374721034 | 0.01 $\mu$ F±5%,50V,Plastic capacitor |
| P101 | 25060160 | NTM-4PDML086,Antenna terminal <D> |
| | 25060117 | NTM-2PDML051,Antenna terminal <P/W/Q> |
| P111,P112 | 25050302 | NSCT-6P129,Socket |

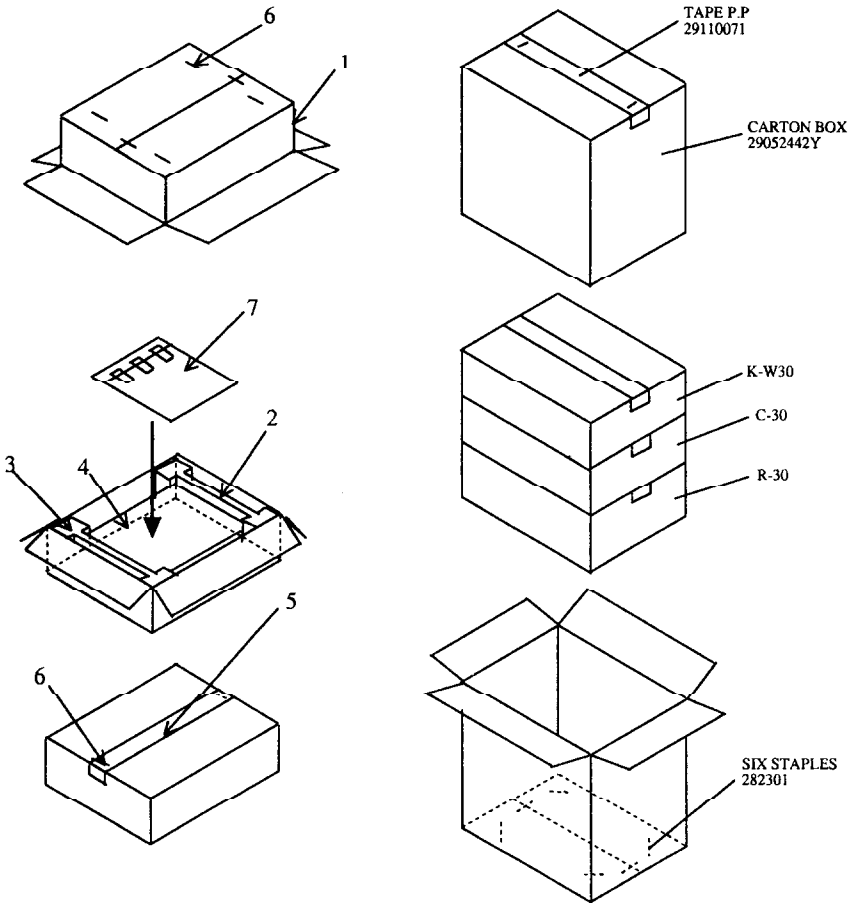
EQUALIZER AMPLIFIER PC BOARD(NAAF-4557-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | IC | |
| Q171 | 22240191 | NJM4565D-D |
| | Capacitors | |
| C171,C172 | 354780229 | 2.2 $\mu$ F,50V,Elect. |
| C177,C178 | 354721019 | 100 $\mu$ F,6.3V,Elect. |
| C179,C180 | 374726224 | 6200pF±5%,50V,Plastic |
| C181,C182 | 374721824 | 1800pF±5%,50V,Plastic |
| C183,C184 | 354780229 | 2.2 $\mu$ F,50V,Elect. |
| C185,C186 | 354742219 | 220 $\mu$ F,16V,Elect. |
| | Plug | |
| P171 | 25055334 | NPLG-9P317 |

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

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

# PACKING VIEW




NOTE: <D>: 120V model only
<P>: 230V model onlt only
<W>: Worldwide model only
<Q>: 240Vmodel only
<F>: French model only
<S>: Silver model only
<B>: Black model only

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 29052423AY | Master carton box <S> |
| | 29052424AY | Master carton box <B> |
| 2 | 29091576Y | Pad F |
| 3 | 29091577Y | Pad R |
| 4 | 29100037A | Styrene bag |
| 5 | 29110071 | PP tape |
| 6 | 282301 | Sealing hook |
| 7 | Accessary bag ass'y | |
| | 2010098A | Three connection cords |
| | 2010221 | Three cords RI |
| | 292111 | FM antenna <D> |
| | 292112 | FM antenna <P/W/Q> |
| | 232140 | NMA-3057,AM loop antenna |
| | 24140229Y | RC-229S,Remote control transmitter |
| | 3010194Y | Two batteries |
| | 29341747AY | Instruction manual |
| | 29341748AY | Instruction manual <P/W> |
| | 29341749AY | Instruction manual <P/W> |
| | 28341785 | Instruction sheet |
| | 25065448 | YAE21-0235,FM antenna adaptor<F/W/Q> |
| | 29100097 | Styrene bag |
| | 25055018 | CV-K-1,Conversion plug <W> |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