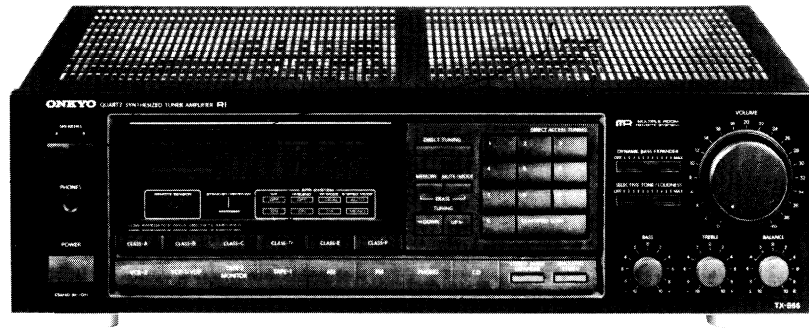


ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-866



Black model

| | |
|--------------------|----------------------|
| BHUD, BHUDN, BHUDC | 120V AC, 60Hz |
| BHUG | 220V AC, 50Hz |
| BHUW | 120/220V AC, 50/60Hz |
| BHUQA, BHUQB | 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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SPECIFICATIONS

AMPLIFIER SECTION

| | -220V/Worldwide models- | -120V model- |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Power output: | 70 watts per channel, min, RMS, at 8 ohms, both channels driven, from 20Hz to 20kHz, with no more than 0.04% total harmonic distortion. | 80 watts per channel, min, RMS, at 8 ohms both channels driven, from 20Hz to 20kHz, with no more than 0.04% total harmonic distortion. |
| Musical Power Output: | 2×180 watts at 4 ohms, 1kHz (DIN) 2×120 watts at 8 ohms, 1kHz (DIN) | |
| Continuous Power Output: | 2×105 watts at 4 ohms, 1kHz (DIN) 2×77 watts at 8 ohms, 1kHz (DIN) | |
| Total Harmonic Distortion: | 0.04% at rated power 0.04% at 1 watts output | 0.04% at rated power |
| IM Distortion: | 0.04% at rated power 0.04% at 1 watts output | 0.04% at rated power |
| Damping Factor: | 60 at 8 ohms | 60 at 8 ohms |
| Frequency Response: | 20–30,000Hz ±1dB | 20–30,000Hz ±1dB |
| RIAA Diviation: | 20–20,000Hz ±0.8dB | 20–20,000Hz ±0.8dB |
| Sensitivity and Impedance: | Phono: 2.5mV/50 kohms CD: 150mV/50 kohms Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms | Phono: 2.5mV/50 kohms CD: 150mV/50 kohms Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms |
| Phono Overload (MM): | 120mV RMS at 1kHz, 0.04% THD. | 120mV RMS at 1kHz, 0.04% THD. |
| Signal-to-Noise Ratio: | Phono: 80dB (at 5mV input, IIF-A) CD/Tape: 102dB (IHF A) | Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF A) |
| Tone controls: | Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz | Bass: ±10dB at 100Hz Treble: ±10dB at 10kHz |
| Muting | –∞ | –∞ |

TUNER SECTION

FM:

| | | |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Tuning Range: | 87.50–108.00MHz (50kHz steps) 87.50–108.00MHz (50kHz steps) or 87.9–107.9kHz (200kHz steps) (Worldwide model) | 87.9–107.9MHz (200kHz steps) |
| Usable Sensitivity: | Mono: 11.2dBf, 1.0μV, 75 ohms 0.9μV (S/N 26dB, 40kHz Devi.) 75ohms DIN Stereo: 18.0dBf, 2.2μV, 75ohms 23μV (S/N 46dB, 40kHz Devi.) 75ohms DIN | Mono: 10.8dBf, 1.9μV Stereo: 17.2dBf, 4.0μV |
| 50dB Quieting Sensitivity: | Mono: 18.0dBf, 2.2μV, 75ohms Stereo: 37.2dBf, 20μV, 75ohms | Mono: 17.2dBf, 4.0μV Stereo: 37.2dBf, 40μV |
| Capture Ratio: | 1.5dB | 1.5dB |
| Image Rejection Ratio: | 85dB | 40dB |
| IF Rejection Ratio: | 90dB | 90dB |
| Signal-to-Noise Ratio: | Mono: 73dB Stereo: 67dB | Mono: 73dB Stereo: 67dB |
| Alternate Channel Attenuation: | | 55dB |
| Selectivity: | 50dB DIN (±300kHz, 40kHz, dev.) | |
| AM suppression Ratio: | 50dB | 50dB |
| Harmonic Distortion: | Mono: 0.15% Stereo: 0.25% | Mono: 0.15% Stereo: 0.25% |
| Frequency Response: | 30–15,000Hz ±1.5dB | 30–15,000Hz ±1.5dB |
| Stereo Separation: | 45dB at 1kHz 30dB at 100–10,000Hz | 45dB at 1kHz 30dB at 100–10,000Hz |
| Muting Level: | 17.2dBf, 4.0μV | 17.2dBf, 4.0μV |
| AM: | | |
| Tuning Range: | 522–1611kHz (9kHz steps) 531–1602kHz (9kHz steps) Saudi Arabia & Worldwide model | 530–1710kHz (10kHz steps) |
| Usable Sensitivity: | 30μV | 30μV |
| Image Rejection Ratio: | 40dB | 40dB |
| IF Rejection Ratio: | 40dB | 40dB |
| Signal-to-Noise Ratio: | 40dB | 40dB |
| Harmonic Distortion: | 0.7% | 0.7% |

GENERAL

| | |
|---------------------|-----------------------------------------|
| Dimensions (W×H×D): | 435×137×350mm 17-1/8"×5-3/8"×13-3/4" |
| Weight: | 9.0kg., 19.8 lbs. |

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

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

D (120V) model

| Circuit no. | Part no. | Description |
|-------------|----------|---------------------|
| F901 | 252050 | 5 A (ST-6), Primary |

G (220V) and Q (240V) models

| Circuit no. | Part no. | Description |
|-------------|----------|---------------------------------------------|
| F902 | 252075 | 2.5A-SE-EAK, Primary |
| F903 | 252075 | 2.5A-SE-EAK, AC outlet (Only 220V model) |

W (Worldwide) model

| Circuit no. | Part no. | Description |
|-------------|----------|----------------------|
| F901 | 252050 | 5A (ST-6), Primary |
| F902 | 252075 | 2.5A-SE-EAK, Primary |

2. Change of FM/AM band step.

With the exception of the models below, a BAND STEP selector switch is not provided.

(FM)

| MODEL | BAND STEP | D761 |
|-------|--------------|------------|
| UD | 200kHz→50kHz | Additional |
| UG/UQ | 50kHz→200kHz | Eliminated |

(AM)

| BAND STEP | D717 |
|------------|------------|
| 10kHz→9kHz | Eliminated |
| 9kHz→10kHz | Additional |

In D761 and D717 1SS133 (Part No. 223163) are used.

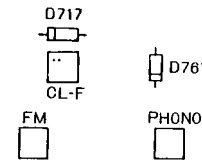
— Worldwide model —

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 200kHz and 10kHz depending on the area where the unit is used.

| | De-emphasis | FM step | AM step |
|---------|--------------|---------|---------|
| Europe: | 50 μ sec | 50kHz | 9kHz |
| U.S.A.: | 75 μ sec | 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



DISPLAY PC BOARD

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.

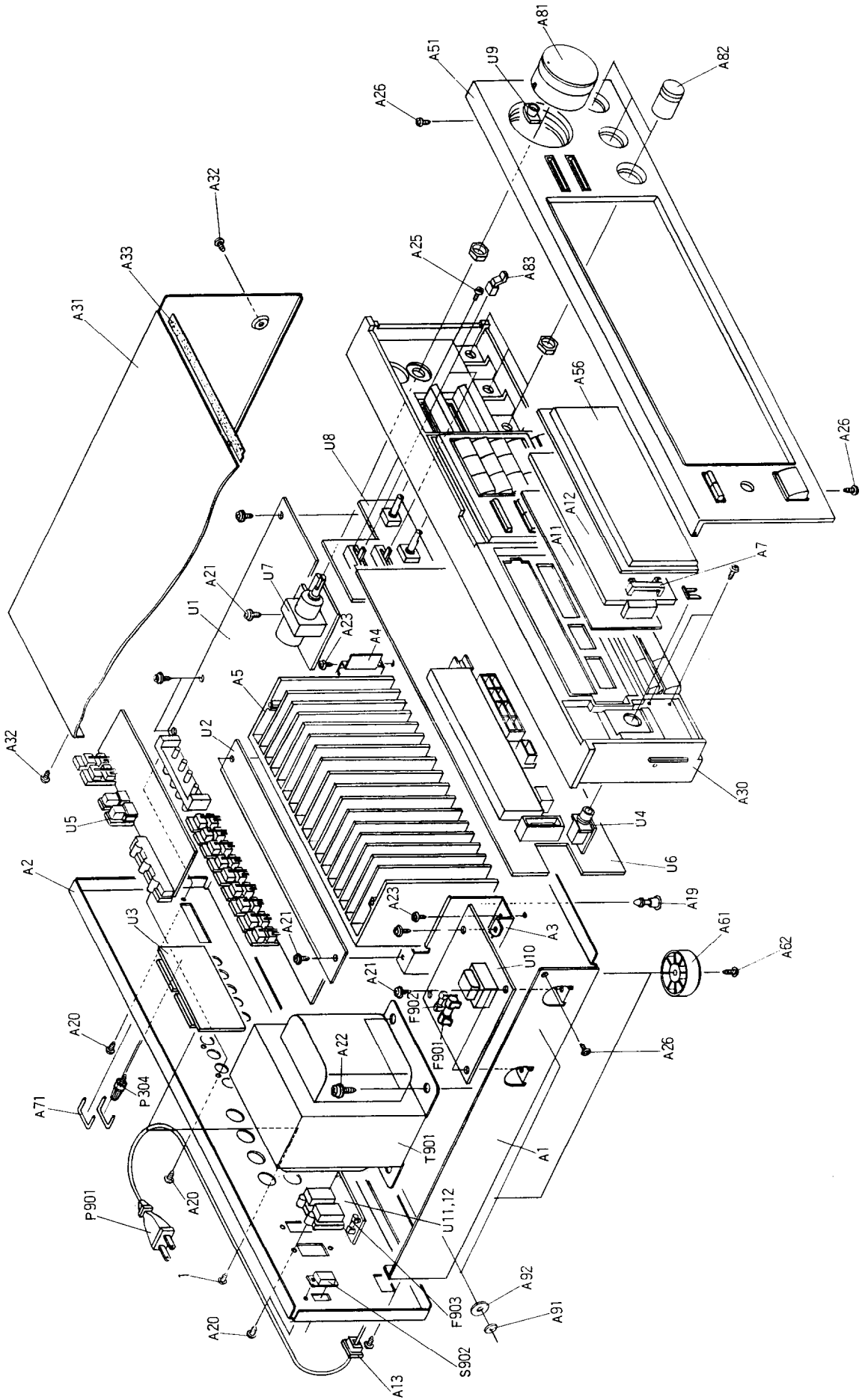
Connect the insulating-resistance tester between the plug of power supply cord and terminal GND on the back panel. Specifications: 3.3 Mohm \pm 10% at 500V.

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



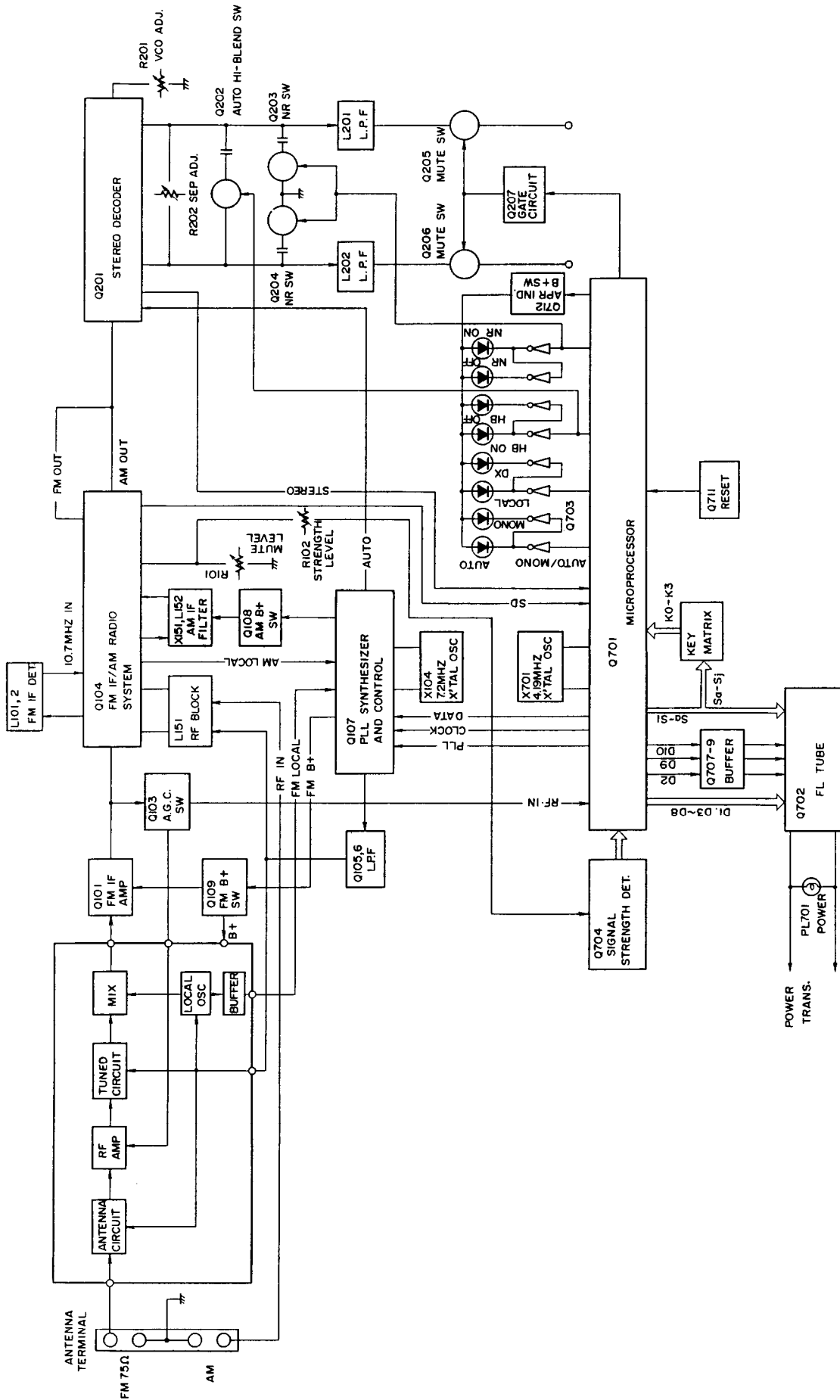
PARTS LIST

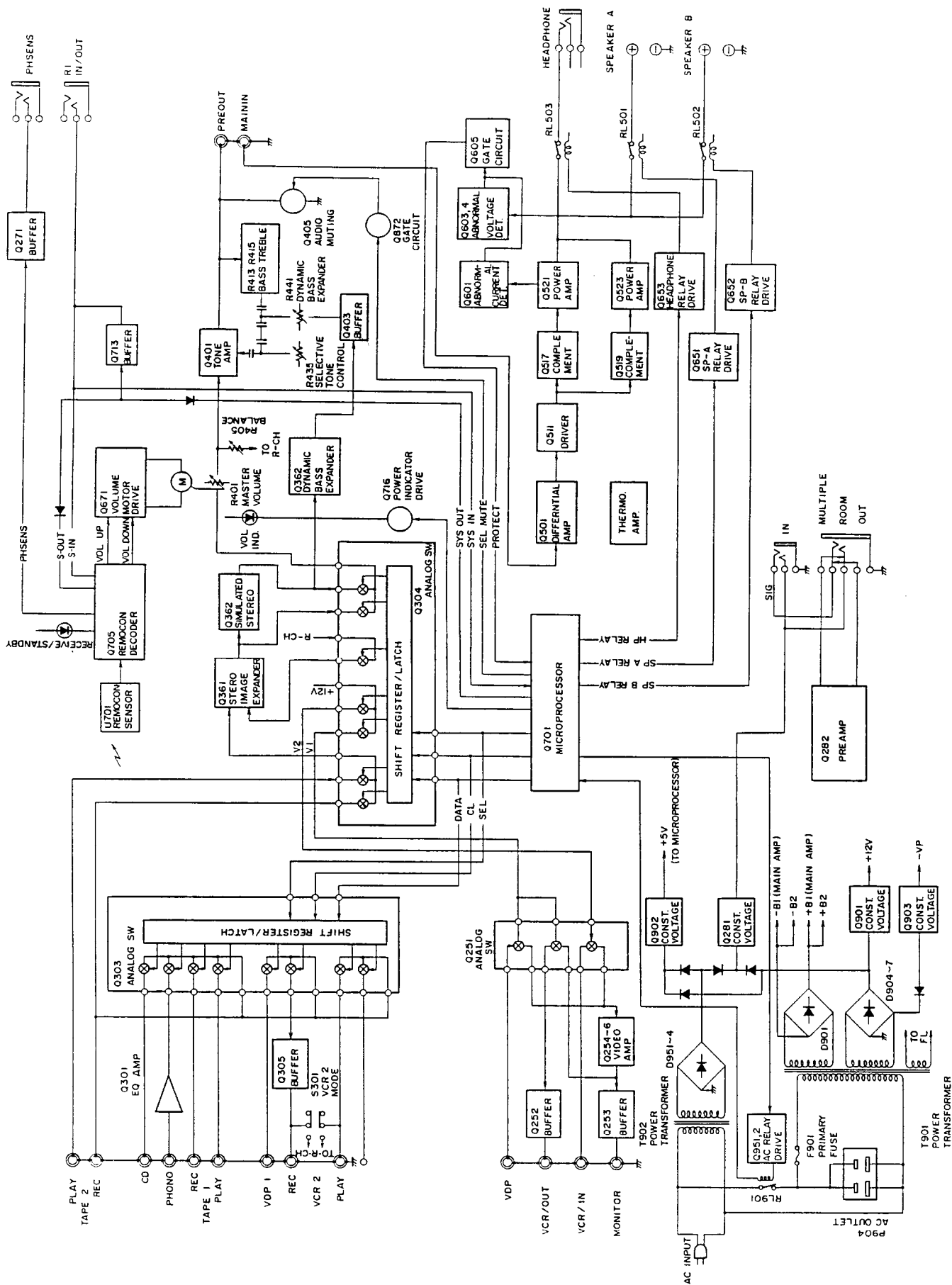
| REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION | REF. NO. | PART NO. | DESCRIPTION |
|----------|----------------------------------|------------------------------------|------------|-----------------------------------------------|-------------------------------------------------------------------------------------------|----------|-------------|-------------------------------------------------------|
| A1 | 27100163-2 | Chassis | P901 | 253149 or 253151 | AS-CEE, Power supply cord <G/W> | U5 | 1A215573-1 | NAETC-3873-1, Video terminal pc board ass'y <D> |
| A2 | 27121347A | Back panel <D> | P902, P903 | 253118 | AS-SAA, Power supply cord <Q> | U6 | 1A215573-1A | NAETC-3873-1A, Video terminal pc board ass'y <G/W/Q> |
| A3 | 27121347-1A | Back panel <G> | Q521, Q522 | 25050346 | NSCT-2P173, AC outlet terminal <Q> | | 1A215574-1 | NADIS-3874-1, Display pc board ass'y <D> |
| A4 | 27121347-3A | Back panel <W> | | 2201653, 2201654, 2201655, 2202272 or 2202273 | 2SC3856(O), 2SC3856(Y), 2SC3856(P), 2SC3907(R) or 2SC3907(O), Power amplifier transistors | | 1A215574-1A | NADIS-3874-1A, Display pc board ass'y <G/Q> |
| A5 | 27121347-4 | Back panel <Q> | Q523, Q524 | 2201663, 2201664, 2201665, 2202262 or 2202263 | 2SA1492(O), 2SA1492(Y), 2SA1492(P), 2SA1516(R) or 2SA1516(O), Power amplifier transistors | U7 | 1A215575-1 | NAAF-3875-1, Volume pc board ass'y <D> |
| A6 | 27141391 | Bracket LH | | 25065287 | NSS-22113P, Voltage selector switch <W> | | 1A215575-1A | NAAF-3875-1A, Volume pc board ass'y <G/W/Q> |
| A7 | 27141392 | Bracket RH | S902 | 2300432 | NPT-1033D, Power transformer <D> | U8 | 1A215576-1 | NAAF-3876-1, Preamplifier pc board ass'y <D> |
| A8 | 27160257 | Radiator | T901 | 2300304 | NPT-992G, Power transformer <G> | | 1A215576-1A | NAAF-3876-1A, Preamplifier pc board ass'y <D> |
| A9 | 27190644 | Holder, dial plate | | 2300305 | NPT-992DG, Power transformer <W> | U9 | 1A215577-1 | NADIS-3877-1, Volume indicator pc board ass'y |
| A10 | 28133244 | Back plate | | 2300339 | NPT-992Q, Power transformer <Q> | U10 | 1A215578-1 | NAPS-3878-1, Power supply circuit pc board ass'y <D> |
| A11 | 28133244 | Back plate | | 1A215569-1 | NAAR-3869-1, FM/AM tuner and selector circuit pc board ass'y <D> | | 1A215578-1A | NAPS-3878-1A, Power supply circuit pc board ass'y <G> |
| A12 | 28130260 | Dial plate | U1 | 1A215569-1A | NAAR-3869-1A, FM/AM tuner and selector circuit pc board ass'y <D> | | 1A215578-1B | NAPS-3878-1B, Power supply circuit pc board ass'y <W> |
| A13 | 27300750 | Strainrelief | | 1A215569-1B | NAAR-3869-1B, FM/AM tuner and selector circuit pc board ass'y <G/Q> | | 1A215578-1C | NAPS-3878-1C, Power supply circuit pc board ass'y <Q> |
| A14 | 27190524 | KGLS-14R, Holder | U2 | 1A215570-1 | NAAF-3870-1, Power amplifier pc board ass'y <D/W> | U11 | 1A215579-1 | NAETC-3879-1, AC outlet terminal pc board ass'y <D> |
| A15 | 834430088 | 3TTS+8B(BC), Self-tapping screw | U3 | 1A215570-1A | NAAF-3870-1A, Power amplifier pc board ass'y <G/Q> | | 1A215580-1 | NAETC-3880-1, AC outlet terminal pc board ass'y <G> |
| A16 | 831130088 | 3TTW+8B, Self-tapping screw | U4 | 1A215571-1 | NAETC-3871-1, Speaker terminal pc board ass'y <D> | | 1A215580-1A | NAETC-3880-1A, AC outlet terminal pc board ass'y <W> |
| A17 | 830440089 | 4TTC+8C(BC), Self-tapping screw | | 1A215571-1A | NAETC-3871-1A, Speaker terminal pc board ass'y <G/W/Q> | | | |
| A18 | 834430108 | 3TTS+10B(BC), Self-tapping screw | | 1A215572-1 | NAETC-3872-1, Headphone terminal pc board ass'y <D/W> | | | |
| A19 | 82142004 | 2P+4F(BC), Pan head screw | | 1A215572-1A | NAETC-3872-1A, Headphone terminal pc board ass'y <G/Q> | | | |
| A20 | 833430080 | 3TTP+8P(BC), Self-tapping screw | | | | | | |
| A21 | 801433 | 3SMS10WSW+14B, Sems tapping screw | | | | | | |
| A22 | 27110560A | Front bracket ass'y | | | | | | |
| A23 | 28184394 | Top cover | | | | | | |
| A24 | 834430088 | 3TTS+8B(BC), Self-tapping screw | | | | | | |
| A25 | 28140024 | 0.5t x 10 x 390, Cushion | | | | | | |
| A26 | 1A215121 | Front panel ass'y | | | | | | |
| A27 | 28191561A | Clear plate | | | | | | |
| A28 | 27175153-1 | Leg | | | | | | |
| A29 | 834430088 | 3TTS+8B(BC), Self-tapping screw | | | | | | |
| A30 | 27141033 | Bracket, plug <D> | | | | | | |
| A31 | 28323365C | Knob VOLUME | | | | | | |
| A32 | 28324034 | Knob BALANCE | | | | | | |
| A33 | 28322925 | Knob SLIDE | | | | | | |
| A34 | 870048 | 3 x 8 x t0.8, Washer, nylon | | | | | | |
| A35 | 27270212 | Spacer <G/W/Q> | | | | | | |
| A36 | 252050 | 5A(ST-6), Primary fuse <D/W> | | | | | | |
| A37 | 252075 | 2.5A-SE-EAK, Primary fuse <G/W/Q> | | | | | | |
| A38 | 252075 | 2.5A-SE-EAK, AC outlet fuse <G> | | | | | | |
| A39 | 25060044 | 14 x 3mm, Terminal GROUND | | | | | | |
| A40 | 253123, 253136, 253140 or 253146 | AS-UC-6 #18, Power supply cord <D> | | | | | | |

NOTE: <D>: Only 120V model
<G>: Only 220V model
<W>: Only Worldwide model
<Q>: Only 240V model

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

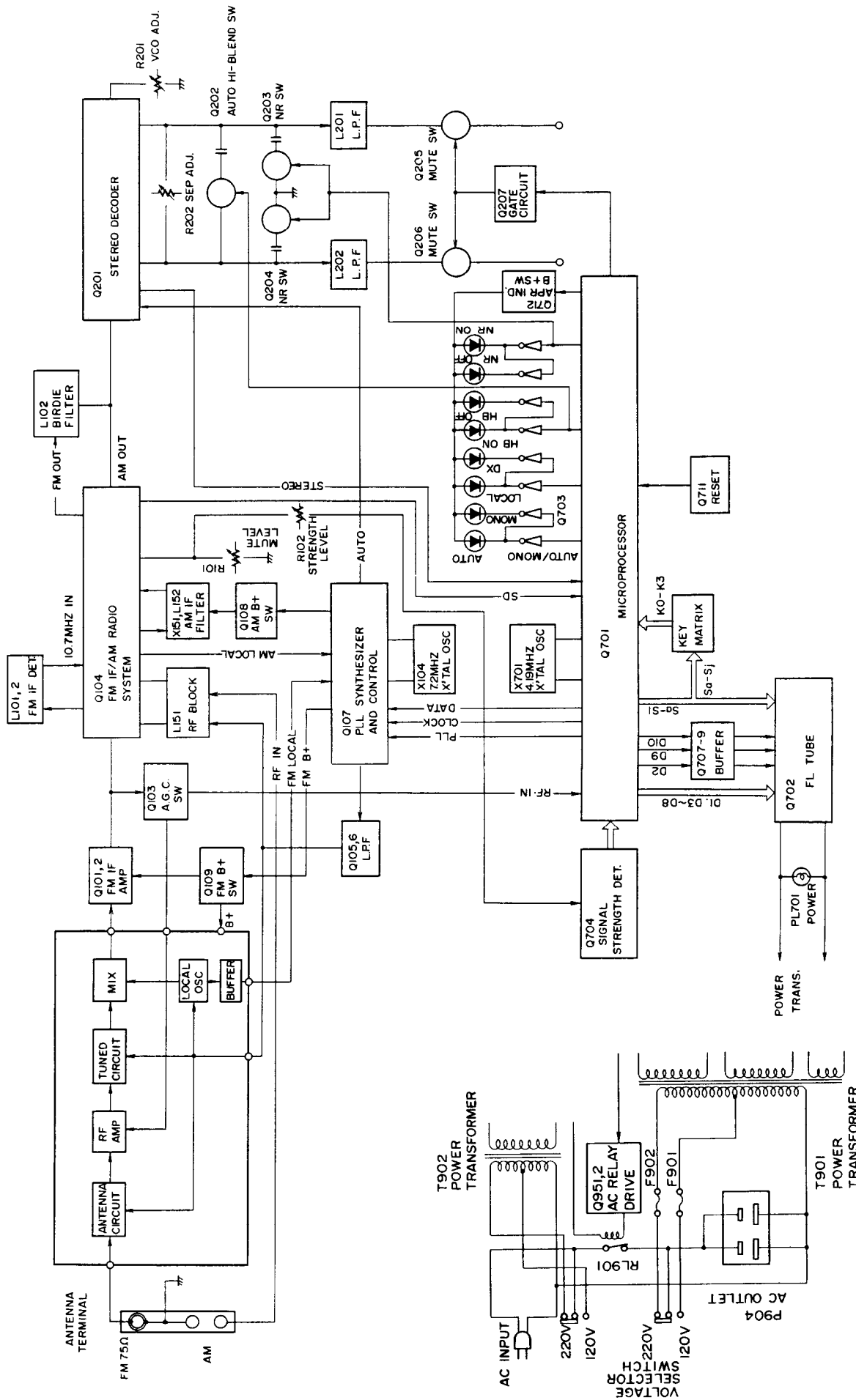
BLOCK DIAGRAM — 120V MODEL —

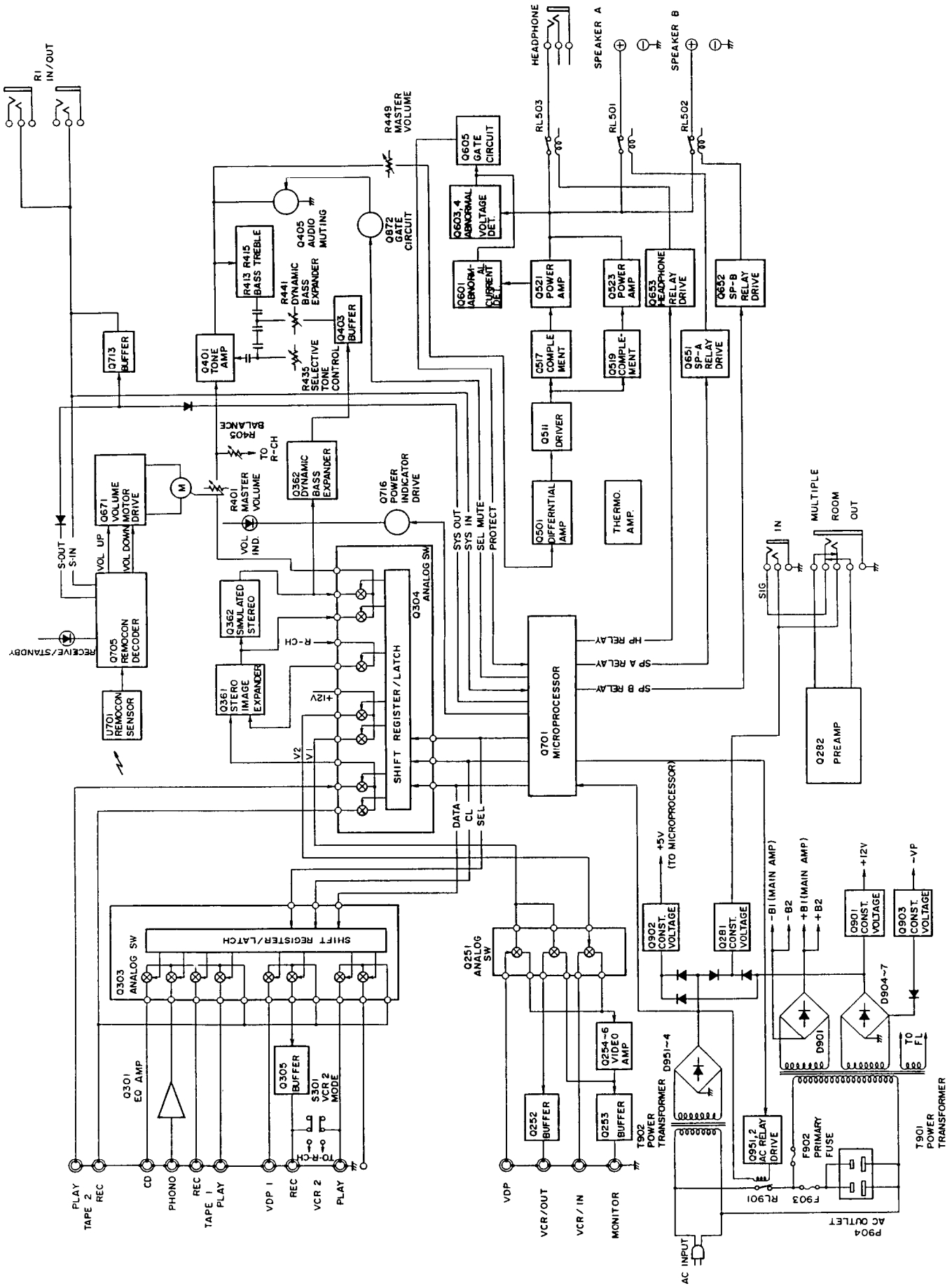




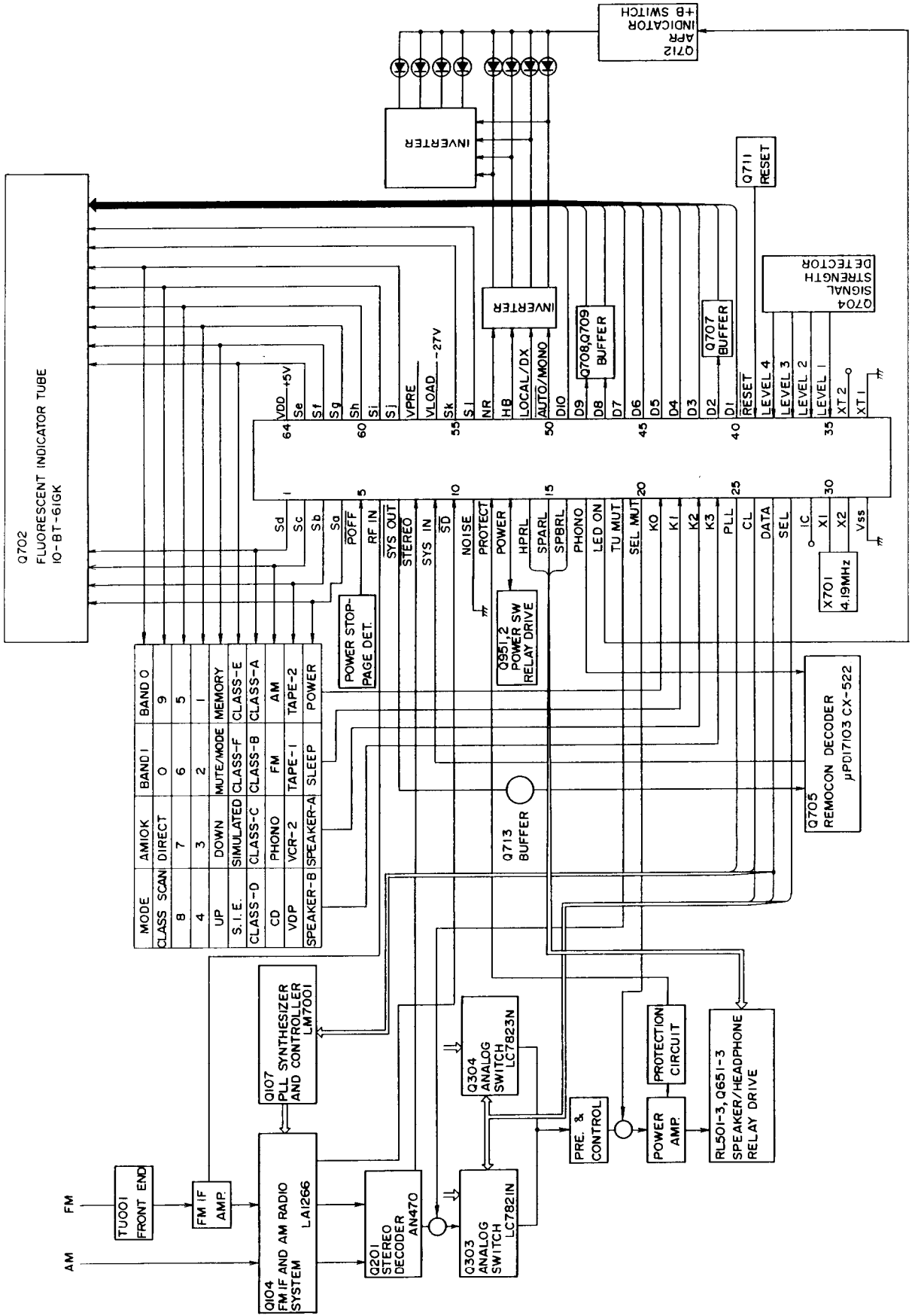
BLOCK DIAGRAM

— OTHER MODELS —





CONNECTION DIAGRAM OF MICROPROCESSOR



Q701 μ PD75286CW-014 (MICROPROCESSOR)

| Pin No. | Function | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------|-----|--------|----|---|--------|--|-------|-----|-----|-----|-----|----|----|---------|---|-----|-----|-----|-----|---|---|---------|---|----|-----|-----|-----|---|---|-----------|---|----|----|-----|-----|---|---|-----------|---|----|----|----|-----|---|---|-----------|---|----|----|----|----|---|---|
| 1-4 | Sd-Sa | Segment and key scan output terminals. "H" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | POFF | This is the input terminal for detection of the stoppage of electric current. "L" when the stoppage of electric current. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | RF IN | RF mode input terminal Control the terminal LOCAL/DX as shown below. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>RF IN</th> <th>LOCAL/DX</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>L</td> </tr> <tr> <td>H</td> <td>H</td> </tr> </tbody> </table> | RF IN | LOCAL/DX | L | L | H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RF IN | LOCAL/DX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | SYS OUT /SYS EN | System code output terminal. "L" when active. The initial setting input terminal when the power turns on. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | STEREO | Stereo broadcast detection input terminal. "L" when stereo broadcast. Control of STEREO indicator. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | SYS IN | System code input terminal. "H" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | SD | Broadcast detection input terminal. "L" when tuned. Control the stop of the auto tuning and the output TU MUT. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | NOISE | Noise detection input terminal. "H" when active. Control the stop of the auto tuning. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | PROTECT | Protect operation detection input terminal. "H" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | POWER | Relay control output terminal for power switch. "H" when the power turns on. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | HPRL | Relay control output terminal for headphone. "H" when the relay turns on. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | SPARL | Relay control output terminal for speaker A. "H" when the relay turns on. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | SPBRL | Relay control output terminal for speaker B. "H" when the relay turns on. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | PHONO | Phono control output terminal. "L" when the selector switch is PHONO. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | LED ON | APR indicator control output terminal. "L" when indicators light on. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | TU MUT | Muting output terminal of tuner section. "H" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | SEL MUT | Muting output terminal when the selector switch operates. "H" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21-24 | K0-K3 | Key scan input terminals. "H" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | PLL | Output terminal to connect to the terminal CE of PLL IC(LN7001). | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | CL | Output terminal to connect to the terminal CL of function switches(LC7821N, LC7823N) and the terminal CL of PLL IC. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | DATA | Output terminal to connect to the terminal DI of function switches(LC7821N, LC7823N) and the terminal DATA of PLL IC. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | SEL | Output terminal to connect to the terminal CE of function switches. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | IC | Internal connected | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | X1 | Ceramic oscillator connection terminals for main system clock. Connect to the 4.19MHz ceramic oscillator. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | X2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | GND | Ground terminal. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | XT1 | Crystal oscillator connection terminal for sub-system. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | XT2 | Not used. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35-38 | LEVEL1- LEVEL4 | Signal strength level input terminal. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2"></th> <th colspan="5">Signal indicator</th> <th colspan="2">Output</th> </tr> <tr> <th>Input</th> <th>1th</th> <th>2nd</th> <th>3th</th> <th>4th</th> <th>NR</th> <th>HB</th> </tr> </thead> <tbody> <tr> <td>LEVEL 1</td> <td>H</td> <td>off</td> <td>off</td> <td>off</td> <td>off</td> <td>H</td> <td>H</td> </tr> <tr> <td>LEVEL 1</td> <td>L</td> <td>on</td> <td>off</td> <td>off</td> <td>off</td> <td>H</td> <td>H</td> </tr> <tr> <td>LEVEL 1/2</td> <td>L</td> <td>on</td> <td>on</td> <td>off</td> <td>off</td> <td>L</td> <td>H</td> </tr> <tr> <td>LEVEL 1-3</td> <td>L</td> <td>on</td> <td>on</td> <td>on</td> <td>off</td> <td>L</td> <td>H</td> </tr> <tr> <td>LEVEL 1-4</td> <td>L</td> <td>on</td> <td>on</td> <td>on</td> <td>on</td> <td>L</td> <td>L</td> </tr> </tbody> </table> | | Signal indicator | | | | | Output | | Input | 1th | 2nd | 3th | 4th | NR | HB | LEVEL 1 | H | off | off | off | off | H | H | LEVEL 1 | L | on | off | off | off | H | H | LEVEL 1/2 | L | on | on | off | off | L | H | LEVEL 1-3 | L | on | on | on | off | L | H | LEVEL 1-4 | L | on | on | on | on | L | L |
| | Signal indicator | | | | | Output | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Input | 1th | 2nd | 3th | 4th | NR | HB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEVEL 1 | H | off | off | off | off | H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEVEL 1 | L | on | off | off | off | H | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEVEL 1/2 | L | on | on | off | off | L | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEVEL 1-3 | L | on | on | on | off | L | H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LEVEL 1-4 | L | on | on | on | on | L | L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | RESET | Reset input terminal. "L" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40-49 | D1-D10 | Digit output terminals. "H" when active. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|-------|-----------|------------------------------------------------------------------------------------------------------------|
| 50 | AUTO/MONO | AUTO/MONO indicator output terminal. "L" when FM mode is AUTO and "H" when FM mode is MONO. |
| 51 | LOCAL/DX | LOCAL/DX indicator output terminal. Control according input RF IN when FM. |
| 52 | HB | Hi-blend control and indicator output terminal. "H" when LEVEL4 is high and "L" when LEVEL4 is low. |
| 53 | NR | Noise reduction control and indicator output terminal. "H" when LEVEL2 is high and "L" when LEVEL2 is low. |
| 54,55 | Sl,Sk | Segment output terminal. "H" when active. |
| 56 | VLOAD | Pull down resistor connection terminal of FIP controller/driver. |
| 57 | VPRE | Power supply terminal for output buffer of FIP controller/driver. |
| 58-63 | Sj-Se | Segment and key scan signal output terminals. "H" when active. |
| 64 | VDD | Power supply terminal. (+5V) |

BAND1, BAND0 (FM band setting)

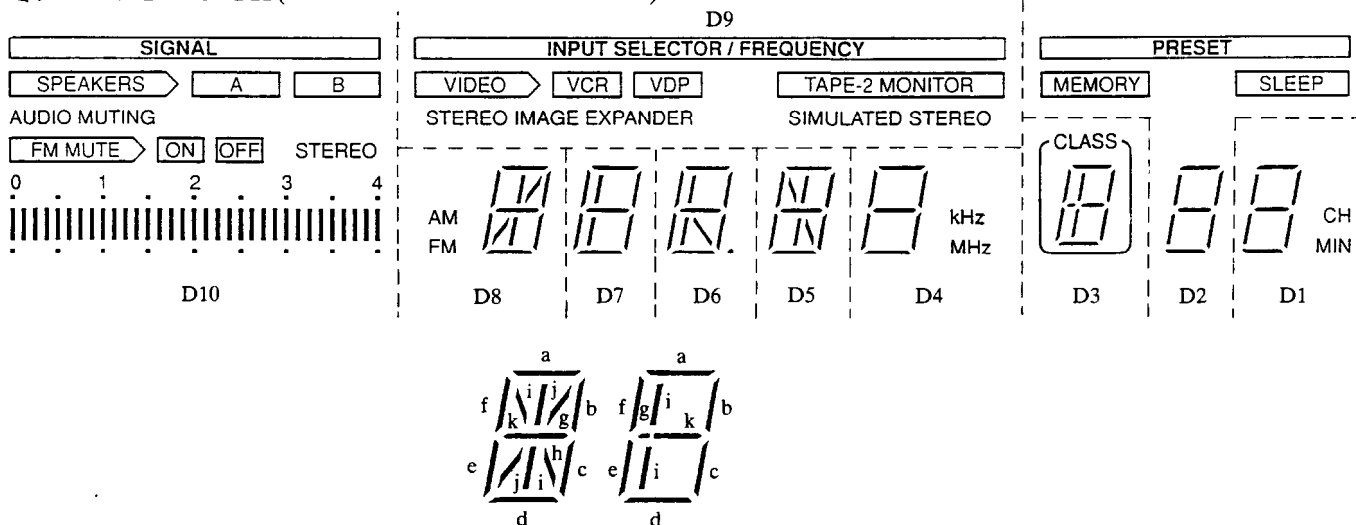
| BAND1 | BAND0 | Region | Frequency range | Channel space | Reference frequency | IF frequency |
|-------|-------|--------------|-----------------|---------------|---------------------|--------------|
| 0 | 1 | Europe | 87.50~108.00MHz | 50kHz | 25kHz | 10.7MHz |
| 0 | 0 | U.S.A. | 87.9 ~107.9 MHz | 200kHz | 25kHz | 10.7MHz |
| 1 | X | Saudi Arabia | 87.50~108.00MHz | 50kHz | 25kHz | 10.7MHz |

X: Don't care

AM10K

| AM10K | Region | Frequency range | Channel space | Reference frequency | IF frequency |
|-------|--------------|-----------------|---------------|---------------------|--------------|
| 0 | Europe | 522~1611kHz | 9kHz | 9kHz | 450kHz |
| 1 | U.S.A. | 530~1710kHz | 10kHz | 10kHz | 450kHz |
| 0 | Saudi Arabia | 531~1602kHz | 9kHz | 9kHz | 450kHz |

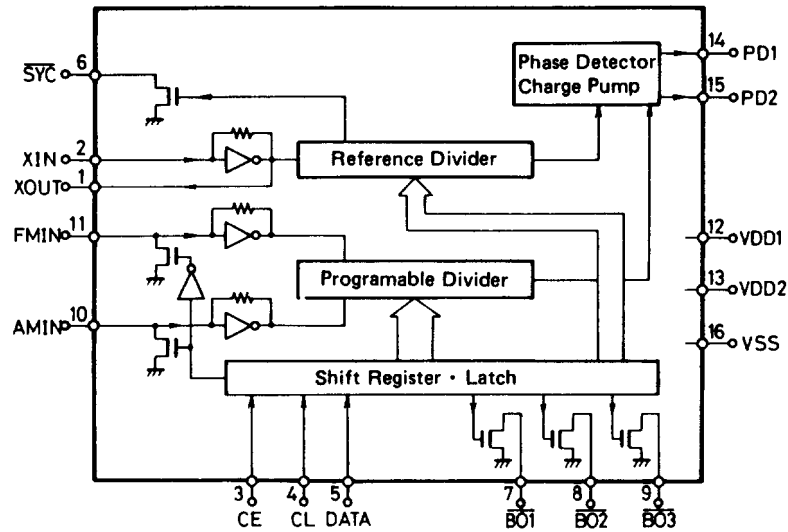
Q702 10-BT-61GK (Fluorescent Indicator Tube)



| | D10 | D9 | D8 | D7 | D6 | D5 | D4 | D3 | D2 | D1 |
|----|------------|------------|----|----|----|----|-----|-------|--------|-----|
| Sa | A | VIDEO | a | a | a | a | a | a | a | a |
| Sb | B | VCR | b | b | b | b | b | b | b | b |
| Sc | AUDIO MUT | VDP | c | c | c | c | c | c | c | c |
| Sd | STEREO | TAPE-2MONI | d | d | d | d | d | d | d | d |
| Se | II(LEVEL1) | SIMULATED | e | e | e | e | e | e | e | e |
| Sf | II(LEVEL2) | STEREO IM. | f | f | f | f | f | f | f | f |
| Sg | II(LEVEL3) | | g | g | g | g | g | g | g | g |
| Sh | II(LEVEL4) | | | h | h | | | | | |
| Si | FM MUTE | | i | i | i | i | | i | | |
| Sj | ON | | j | | | | | | MEMORY | |
| Sk | OFF | | AM | | | | kHz | k | SLEEP | CH |
| Sl | SIGNAL | INPUT SEL. | FM | | | | MHz | CLASS | PRESET | MIN |

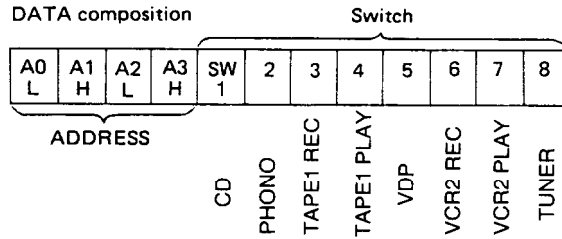
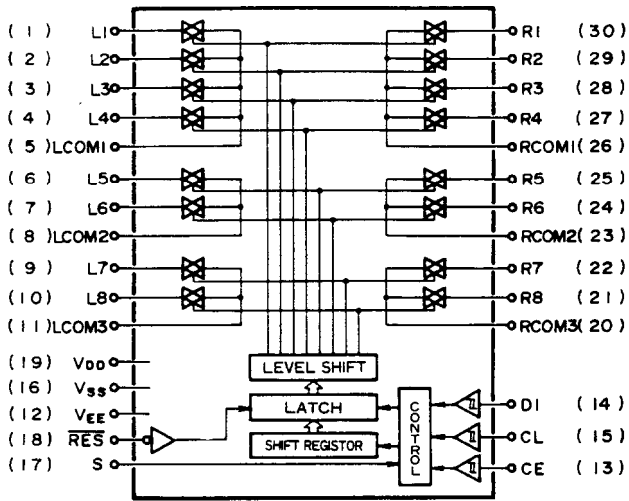
BLOCK DIAGRAMS OF IC

Q107 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 μ PD75286CW-014. |
| 4 | CL | Serial clock input terminal. Connect to the CLOCK terminal of microprocessor μ PD75286CW-014. |
| 5 | DATA | Serial data input terminal. Connect to the DATA terminal of microprocessor μ PD75286CW-014. |
| 6 | SYN | Not used. |
| 7 | $\overline{BO1}$ | Auto/Mono control output terminal. "L" when Auto. |
| 8 | $\overline{BO2}$ | FM control signal output terminal. "L" when FM. |
| 9 | $\overline{BO3}$ | AM control signal output terminal. "L" when AM. |
| 10 | AMIN | AM local oscillator input terminal. |
| 11 | FMIN | FM local oscillator terminal. |
| 12 | VDD1 | Power supply terminal for back-up. |
| 13 | VDD2 | 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. |
| 15 | PD2 | 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. |
| 16 | VSS | Ground terminal. |

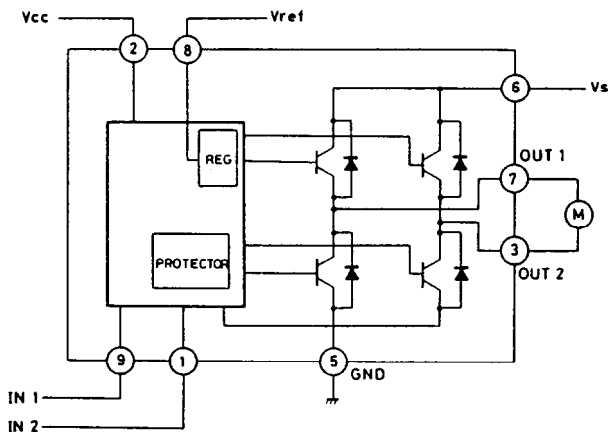
Q303 LC7821N (Analog switch)



The source becomes ON when the bit of switch becomes high.

| Pin No. | Terminal | Description | Pin No. | Terminal | Description |
|---------|------------|-----------------------------------------------------------------------------------------------------------------|-------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | CD | Input/output terminals of audio signal of left channel. Control to the inside analog switch at the serial data. | 16 | Vss | Ground terminal. |
| 2 | PHONO | | 17 | S | Selector terminal. |
| 3 | TAPE 1 REC | | 18 | RES | Reset terminal. When power is turned ON, the condition of the analog switch is not determined, but when this terminal is "L", all analog switches are OFF. |
| 4 | TAPE1 PLAY | | 19 | VDD | Power supply terminal. (+15V) |
| 5 | L COM 1 | | 20 | R COM 3 | Input/output terminals of audio signal of right channel. Control to the inside analog switch at the serial data. |
| 6 | VDP | | 21 | TUNER | |
| 7 | VCR 2 REC | | 22 | VCR 2 PLAY | |
| 8 | L COM 2 | | 23 | R COM 2 | |
| 9 | VCR 2 PLAY | | 24 | VCR 2 REC | |
| 10 | TUNER | | 25 | VDP | |
| 11 | L COM 3 | | 26 | R COM 1 | |
| 12 | Vss | 27 | TAPE 1 PLAY | | |
| 13 | CE | 28 | TAPE 1 REC | | |
| 14 | DI | 29 | PHONO | | |
| 15 | CL | 30 | CD | | |

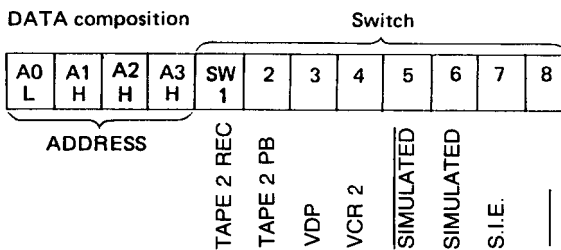
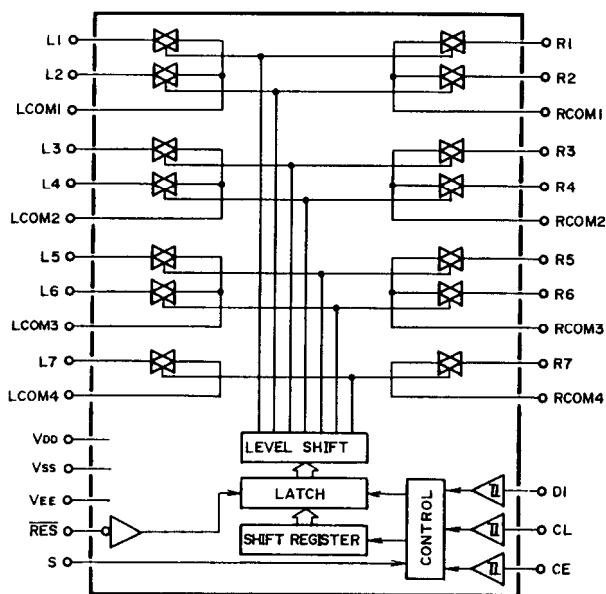
Q871 TA7291S (Volume Motor Drive)



| 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

Q304 LC7823N (ANALOG SWITCH)

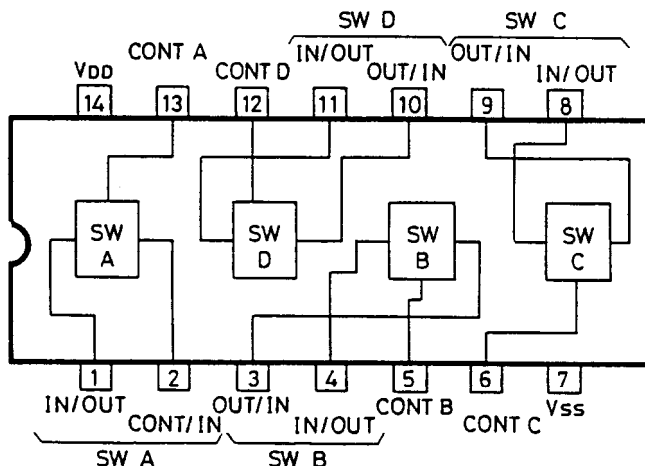


The source becomes ON when the bit of switch becomes high.

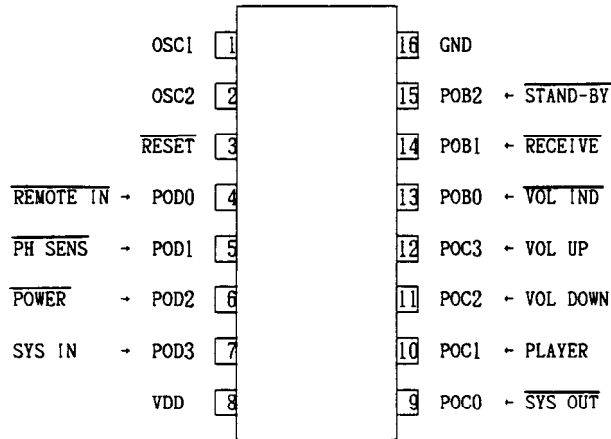
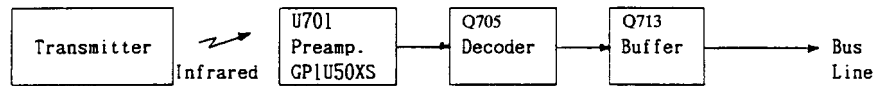
S. I. E. = Stereo Image Expander

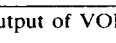
| Pin No. | Terminal | Description | Pin No. | Terminal | Description |
|---------|------------|-----------------------------------------------------------------------------------------------------------------|------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 (L1) | TAPE 2 REC | Input/output terminals of audio signal of left channel. Control to the inside analog switch at the serial data. | 16 | Vss | Ground terminal. |
| 2 (L2) | TAPE 2 PB | | 17 | S | Selector terminal. |
| 3 | L COM 1 | | 18 | RES | Reset terminal. When power is turned ON, the condition of the analog switch is not determined, but when this terminal is "L", all analog switches are OFF. |
| 4 (L3) | VDP | | 19 | VDD | Power supply terminal. (+15V) |
| 5 (L4) | VCR 2 | | 20 | R COM 4 | Input/output terminals of audio signal of right channel. Control to the inside analog switch at the serial data. |
| 6 | L COM 2 | | 21 (R7) | S.I.E. | |
| 7 (L5) | SIMULATED | | 22 | R COM 3 | |
| 8 (L6) | SIMULATED | | 23 (R6) | SIMULATED | |
| 9 | L COM 3 | | 24 (R5) | SIMULATED | |
| 10 (L7) | S.I.E. | | 25 | R COM 2 | |
| 11 | L COM 4 | | 26 (R4) | VCR 2 | |
| 12 | VEE | 27 (R3) | VDP | | |
| 13 | CE | 28 | R COM 1 | | |
| 14 | DI | 29 (R2) | TAPE 2 PB | | |
| 15 | CL | 30 (R1) | TAPE 2 REC | | |

Q251 4066B (ANALOG SWITCH)



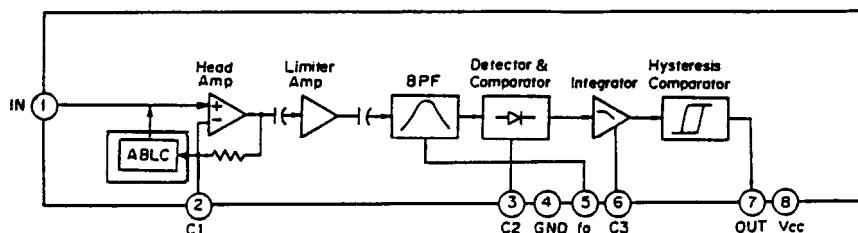
Q705 μ PD17103CX-51 (Remote Control Transmitter Decoder)



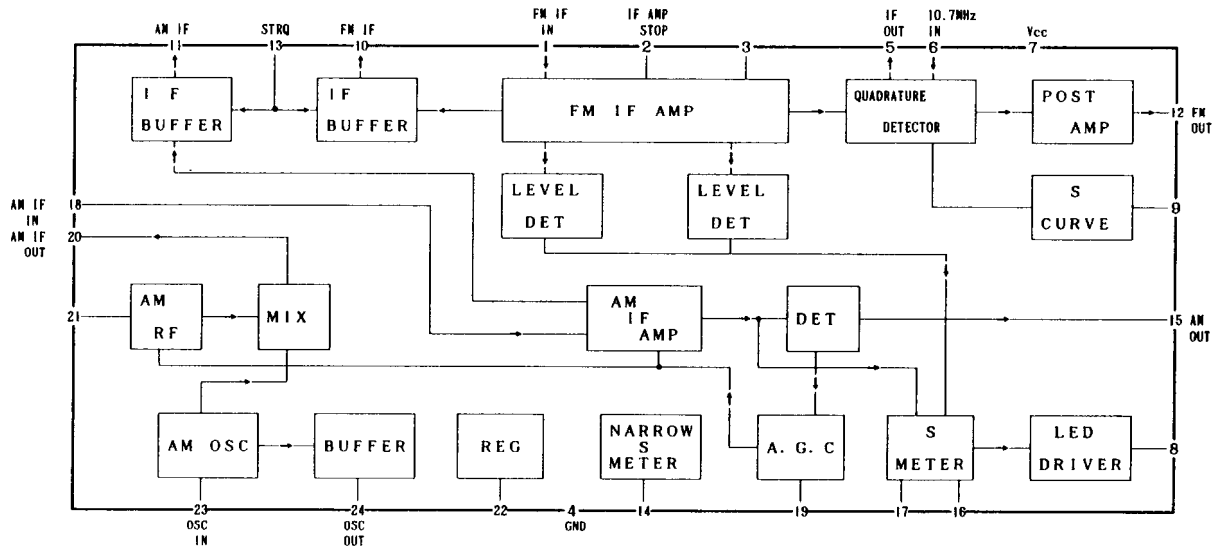
| Pin No. | Symbol | Terminal | Description |
|---------|-----------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | OSC1 | OSC | Connect to the 8.00MHz ceramic oscillator. |
| 2 | OSC2 | | |
| 3 | RES | RESET | System reset terminal. Active low. |
| 4 | POD0 | REMOTE IN | Signal input terminal from preamp. for remote control. Active low. |
| 5 | POD1 | PHONO SENS | Phono detection input terminal. Active low. |
| 6 | POD2 | POWER | Stand-by detection input terminal. During low input, only the POWER code is decoded. |
| 7 | POD3 | SYS IN | System code input terminal. |
| 8 | V _{DD} | +B | Power supply terminal. |
| 9 | POC0 | SYS OUT | Output at this terminal are the custom code (16bits) remote control code input to REMOTE IN, data code (8bits), and the serial code (12bits) that has been converted corresponding to the decoded data code (8bits) |
| 10 | POC1 | PLAYER | When the player PLAY/REEJECT is input, a high pulse of 200ms is output. |
| 11 | POC2 | VOL DOWN | When the volume DOWN code is input, a high pulse of 120ms is output. |
| 12 | POC3 | VOL UP | When the volume UP code is input, a high pulse of 120ms is output. |
| 13 | POB0 | VOL IND | During the output of VOLUME UP/DOWN, a pulse ( = 250ms) is output. (Not used.) |
| 14 | POB1 | RECEIVE | This is the display output for remote control reception. Output is low when decoded code is being received. |
| 15 | POB2 | STAND-BY | STAND-BY indication terminal. |
| 16 | V _{SS} | GND | Ground terminal. |

Q282 XC20106A (REMOTE CONTROL PREAMPLIFIER)

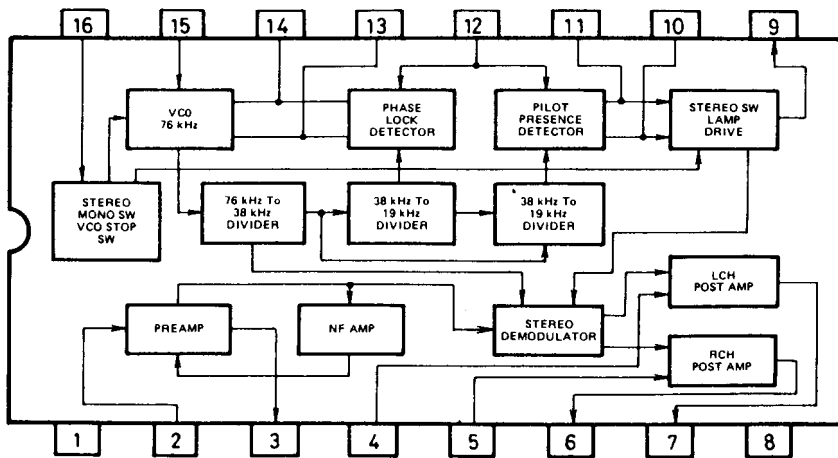
1. IN: Input terminal
2. C1: Frequency response and gain setting terminal of head amplifier
3. C2: Connect to the capacitor for detector
4. GND: Ground terminal
5. fo: Center frequency setting terminal of BPF
6. C3: Connect to the capacitor for integrator
7. OUT: Output terminal
8. V_{CC}: Power supply terminal



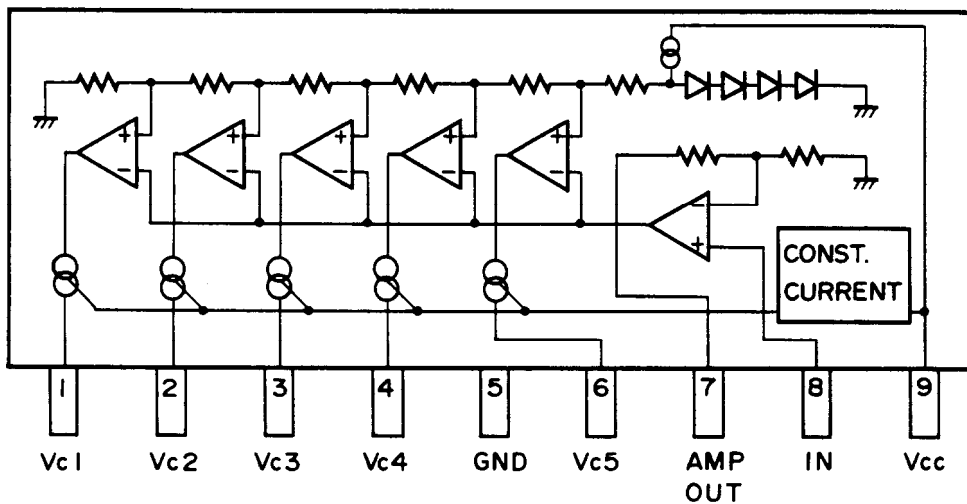
Q104 LA1266 (FM IF and AM Radio System)



Q201 AN7470 (FM Stereo Decoder)



Q704 BA6125 (Signal Strength Detector)



ADJUSTMENT PROCEDURES

Preparation

• Input

FM mono: 1kHz, 75kHz devi., 60dB/ μ V

FM stereo: 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

| | |
|------------------------------|---------|
| TAPE MONITOR | SOURCE |
| VOLUME | Maximum |
| BASS/TREBLE/BALANCE | Center |
| VCR 2 MODE | STEREO |
| SPEAKER | A |
| SIMULATED STEREO | OFF |
| DYNAMIC BASS EXPANDER | OFF |
| STEREO IMAGE EXPANDER | OFF |
| SELECTIVE TONE CONTROL | OFF |

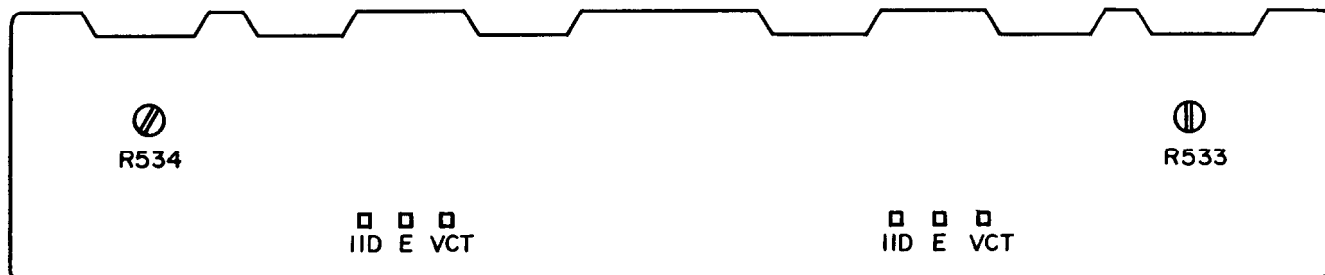
Amplifier section

1. Idling current adjustment

Connect the DC voltmeter to the terminals IID and VCT on the power amplifier pc board.

Adjust the semi-fixed resistors R533 and R534 so that the indication of voltmeter is 7.5 ± 1.5 mV.

Notes: VOLUMEMaximum, Open load, No input
Adjust after switching on for 5 minutes.



PRINTED CIRCUIT BOARD PARTS LIST

DISPLAY PC BOARD(NADIS-3874-1/1A/1B)

| CIRCUIT NO. | PART NO. | DESCRIPTION | CIRCUIT NO. | PART NO. | DESCRIPTION | |
|-------------|-----------------------|---------------------|-------------|---------------------------|----------------|---------------------------------|
| | Remocon sensor | | | | | |
| U701 | 24130003 | GP1U50XS | D731-D733 | 223163 | 1SS133 | |
| | ICs | | D737-D739 | 223163 | 1SS133 | |
| Q701 | 22240337 | μ PD75286CW-014 | D740 | 224450562 | MTZ5.6B | |
| Q703 | 222807 | μ PA81C | D741, D742 | 223163 | 1SS133 | |
| Q704 | 22240341 | BA6125 | D746-D749 | 223163 | 1SS133 | |
| Q705 | 22240338 | μ PD17103CX-522 | D759, D760 | 223163 | 1SS133 | |
| | FL tube | | D761 | 223163 | 1SS133 <G> | |
| Q702 | 212083 | 10-BT-61GK | | | | |
| | Transistors | | D723-D726 | 225142 | SEL2913K | |
| Q707-Q709 | 2213284 | 2SC1740S-R | D727-D730 | 225137CG, | SEL2413E-CG | |
| Q710, Q711 | 221282 | DTC144ES | | 225137DG or | SEL2413E-DG or | |
| Q712 | 2213710 | DTA123JS | | 225137DY | SEL2413E-DY | |
| Q713 | 2213510 | DTA114ES | D752 | 225141 | SEL2213C | |
| Q716 | 221282 | DTC144ES | | | | |
| | Lamp | | L701 | 233409K220 | NCH-1284 | |
| PL701 | 210064B | 250mA, 6.3V | | | | |
| | Diodes | | X701 | 3010163 | CST4.19MGW | |
| D701-D713 | 223163 | 1SS133 | X702 | 3010154 | CST8.00MT | |
| D715, D716 | 223163 | 1SS133 <W> | | | | |
| D717 | 223163 | 1SS133 <D> | | | | |
| D718 | 223163 | 1SS133 | | | | |
| D719 | 224450623 | MTZ6.2C | | | | |
| D720, D721 | 223163 | 1SS133 | | | | |
| D722 | 224450623 | MTZ6.2C | | | | |
| | | | | Coil | | |
| | | | | 233409K220 | NCH-1284 | |
| | | | | | | |
| | | | | Ceraic oscillators | | |
| | | | | 3010163 | CST4.19MGW | |
| | | | | 3010154 | CST8.00MT | |
| | | | | | | |
| | | | | Capacitors | | |
| | | | | C701 | 3000057 | 0.1F, 5.5V, Super |
| | | | | C702, C705 | 375524744 | 0.47 μ F \pm 5%, 50V, MMT |
| | | | | C706 | 353780109 | 1 μ F, 50V, Elect. |
| | | | | C707 | 353781009 | 10 μ F, 50V, Elect. |
| | | | | C708, C709 | 353741009 | 10 μ F, 16V, Elect. |
| | | | | C712 | 353721019 | 100 μ F, 6.3V, Elect. |

FM section

| Item | Step | Connection of instrument | FM SG output | Stereo modulator output | Turning dial setting | Output indicator | Adjustment | Adjust for | Remarks |
|-------------------|---------------------|--------------------------|----------------------------------------------|-------------------------|----------------------|----------------------------------|------------|--------------|----------------------------------------------------------------------------------------|
| FM IF | 1 | Fig. 1 | 99.1MHz 1kHz, 75kHz dev. 65dB (60dB) | - | 99.1MHz | DC voltmeter | L101 | 0V ± 20mV | Mode switch: MONO Repeat the steps 1 and 2 until no further adjustment is necessary |
| | Distortion analyzer | | | | | L102 | Minimum | | |
| VCO | | Fig. 2 | 99.1MHz 1kHz, 75kHz dev. 65dB (60dB) | - | 99.1MHz | Frequency counter | R201 | 19kHz ± 10Hz | |
| Stereo Distortion | | Fig. 3 | 99.1MHz 65dB (60dB) Ext. modulation | L or Rch. 1kHz | 99.1MHz | Distortion analyzer | | Minimum | Mode switch: STEREO Don't turn more than ± 180° |
| | | | | | | | | | |
| Stereo Separation | 1 | Fig. 3 | 99.1MHz 65dB (60dB) Ext. modulation | Lch. 1kHz | 99.1MHz | Rch. AC voltmeter | R202 | Minimum | Maximum and same separation |
| | 2 | | | | | Lch. AC voltmeter | | Minimum | |
| Muting level | | Fig. 3 | 99.1MHz 17.2dB (12dB) 1kHz, 75kHz dev. | - | 99.1MHz | AUTO indicator | R101 | Light on | |
| Signal level | | Fig. 3 | 99.1MHz 35.2dB (30dB) 1kHz, 75kHz dev. | - | 99.1MHz | 4th indicator of signal strength | R102 | Light on | |

Reference specifications

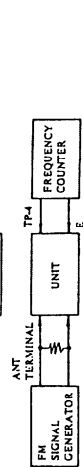
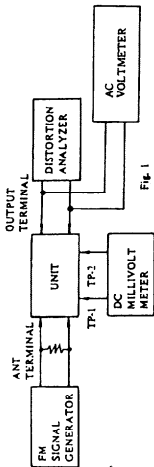
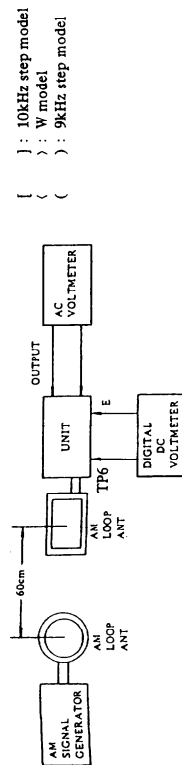
FM Tuned voltage
 87.9MHz 1.6 ± 0.5V
 107.9MHz 7.9 ± 0.5V (120V model)
 87.5MHz 1.6 ± 0.5V
 108.0MHz 7.9 ± 0.5V (Other models)

Auto stop level
 AM: Less than 66dB/m
 FM: Less than 19dB μ

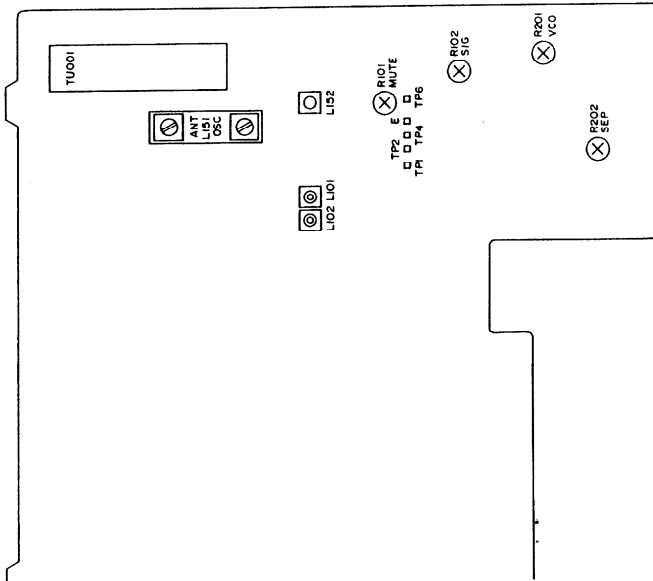
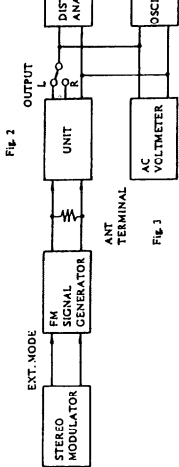
AM Tuned voltage
 530kHz 1.3 ± 0.5V
 1710kHz 7.2 ± 0.5V (120V model)
 522kHz 1.2 ± 0.5V
 1611kHz 7.0 ± 0.5V (120V/240V models)
 531kHz 1.2 ± 0.5V
 1602kHz 7.0 ± 0.5V (Worldwide model)

AM section

| Step | AM SG output | Tuned frequency | Output indicator | Adjustment point | Adjust for |
|------|--------------------------------------------|--------------------------------|----------------------|----------------------|-------------|
| 1 | | 530kHz [522kHz] (531kHz) | Digital DC voltmeter | OSC on RF block L151 | 1.5V ± 0.1V |
| 2 | 600kHz(603kHz) 400Hz 30% mod. 60dB/m | 600kHz (603kHz) | AC voltmeter | RF on RF block L151 | Maximum |
| 3 | 990kHz 400Hz 30% mod. 60dB/m | 990kHz | AC voltmeter | L152 | Maximum |



Use the high impedance probe. (10:1)



| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------------|------------------------------------|
| C714 | 353780109 | 1 μ F, 50V, Elect. |
| | Resistor | |
| R740 | 49163103404 | 10k \times 4, 1/10W, Network |
| | Switches | |
| S701 | 25035548 | NPS-111-S510, Push |
| S703-S736 | 25035548 | NPS-111-S510, Push |
| S737 | 25065286 | NSS-22112, Slide, Band step <W> |
| | Holder | |
| | 27190768 | L.E.D |

VOLUME PC BOARD(NAAF-3875-1/1A)

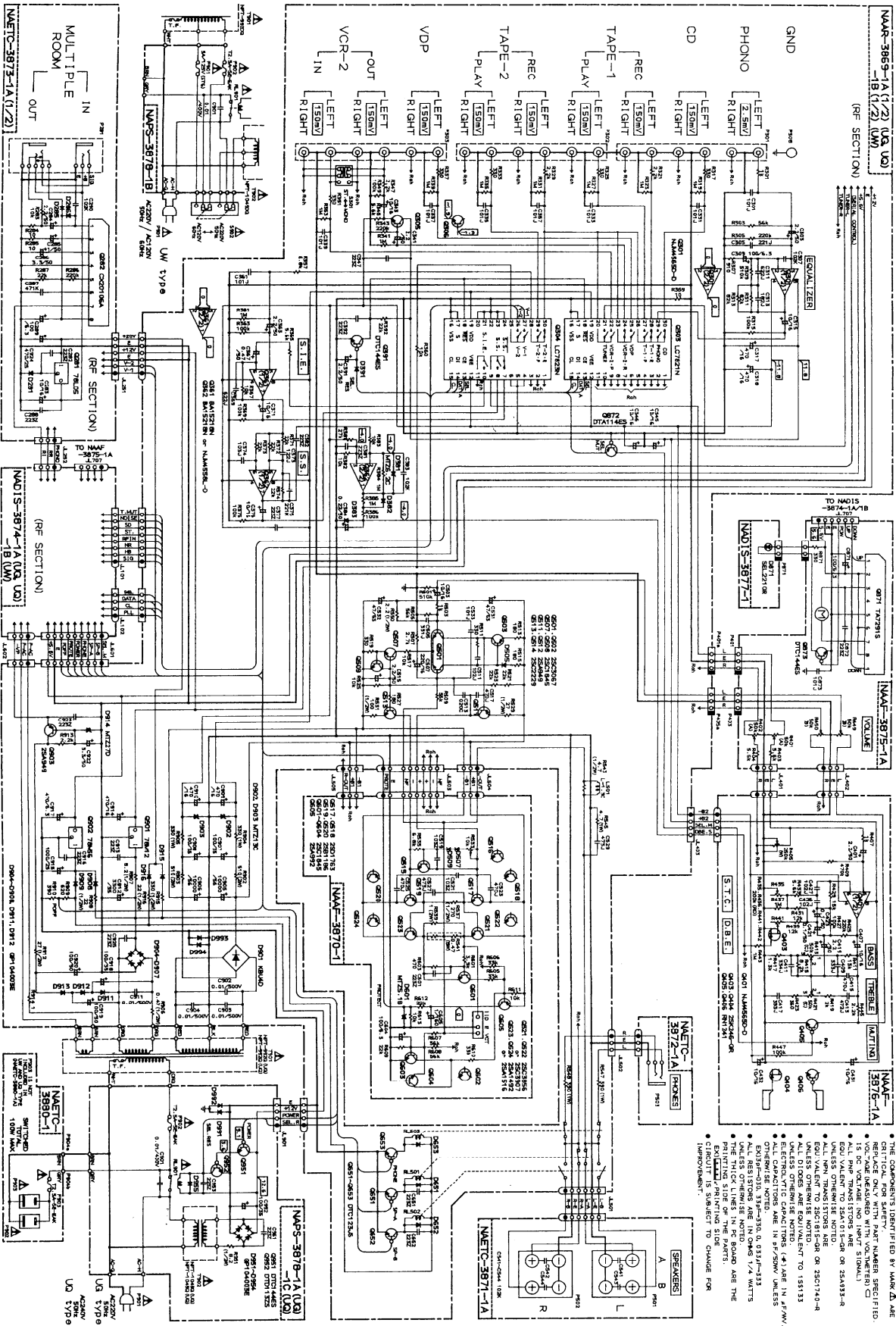
| CIRCUIT NO. | PART NO. | DESCRIPTION |
|--------------------------|-----------|-----------------------------------------------|
| Q871 | 22240239 | TA7291S, IC |
| C871 | 354721019 | 100 μ F, 6.3V, Elect. capacitor |
| R401, R402 | 5142004 | N16RGM50KA30F, Variable resistor <D> |
| R401, R402 R449, R450 | 5144009C | N16RGM50KA50KB30F, Variable resistor <G/W> |
| P401 | 2000809 | NSAS-6P765, Socket |
| P403 | 2000624 | NSAS-6P580, Socket <G/W> |
| P871 | 2000635A | NSAS-4P591, Socket |
| | 27141059 | Bracket, ground |

NOTE: <D>: Only 120V model
<G>: Only 220V/240V models
<W>: Only Worldwide model

CHEMATIC DIAGRAM

A B C D E F G

AMPLIFIER SECTION -
OTHER MODELS



NOTE

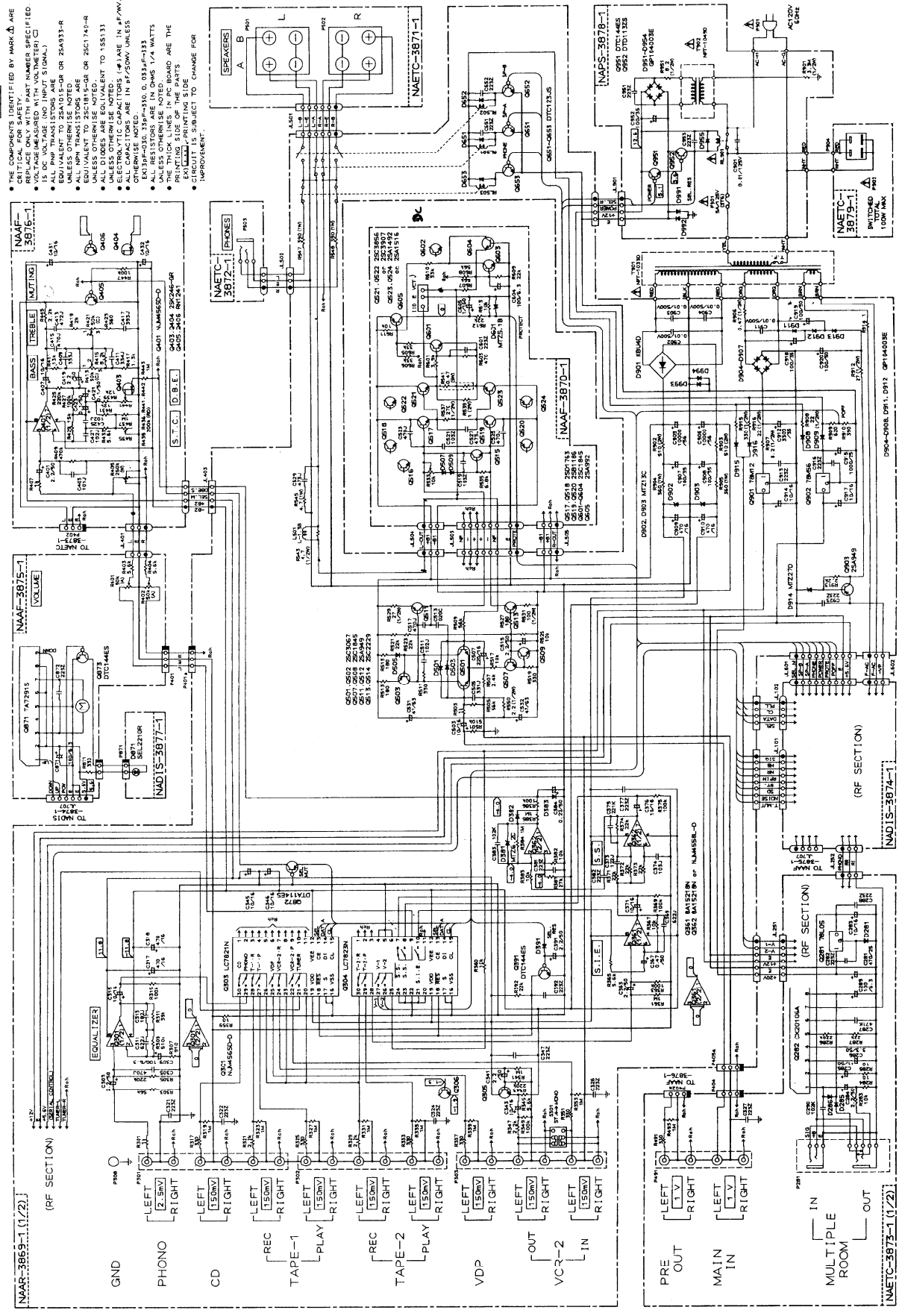
- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR PROPER OPERATION.
- VOLTAJE RESISTOR WITH VALUE IN PARENTHESIS.
- ALL PNP TRANSISTORS ARE 9013.
- SOLE VALVE TO 28A015-08 OR 28A133-R.
- ALL NEON TRANSISTORS ARE 28C1742-4.
- ALL DIODES ARE EQUIVALENT TO 15H133.
- ALL CAPACITORS ARE IN P.F./M.U. UNLESS OTHERWISE NOTED.
- EXCEPT 33P/500P AND 0.022/0.015 UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PCB ARE THE EXCLUDED PRINTING SIDE.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

ONKYO CORPORATION

SCHEMATIC DIAGRAM

A B C D E F G

- AMPLIFIER SECTION -
120V MODEL



NOTE

- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY.
- PART NUMBERS SPECIFIED IN CIRCLES ARE EQUIVALENTS.
- VOLTAGE MEASURED WITH VOLTMETER (V).
- IS DC VOLTAGE (NO INPUT SIGNAL).
- EQUIVALENT TO 25A1015-GR OR 25A933-R UNLESS OTHERWISE NOTED.
- EQUIVALENT TO 25C1815-GR OR 25C1742-R UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1S5131.
- ELECTROLYTIC CAPACITORS (Φ) ARE IN μ F/V.W.
- ALL CAPACITORS ARE IN P.F./50WV UNLESS OTHERWISE SPECIFIED.
- EX13P=330, 135P=330, 0, 0.033 μ F=133.
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE SPECIFIED.
- THE TRACK LINES IN PCB BOARD ARE THE PRINTING SIDE OF THE PARTS.
- THE TRACK LINES IN PCB BOARD ARE THE PRINTING SIDE OF THE PARTS.
- CIRCLES SUGGEST TO CHANGE FOR IMPROVEMENT.

ONKYO CORPORATION

CHEMATIC DIAGRAM

A

B

C

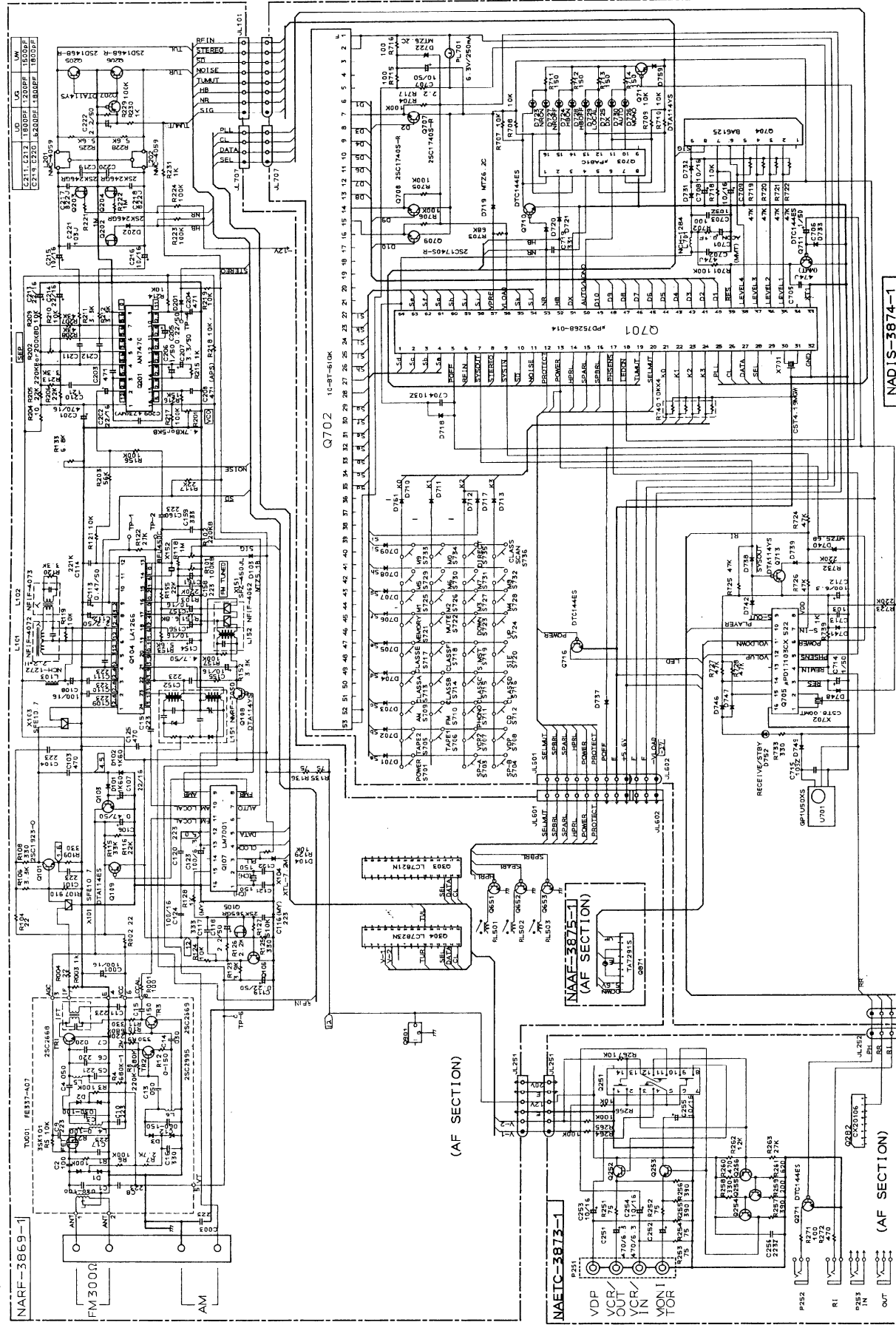
D

E

F

G

- TUNER SECTION -
120V MODEL



ONKYO CORPORATION

NAD1S-3874-1

PRINTED CIRCUIT BOARD PARTS LIST

FM/AM TUNER AND SELECTOR CIRCUIT PC BOARD (NAAR-3869-1/1A/1B)

| CIRCUIT NO. | PART NO. | DESCRIPTION | CIRCUIT NO. | PART NO. | DESCRIPTION | |
|-------------|-------------------------|----------------------------|----------------------------------|------------|------------------------------------------|-----------------------------------------|
| 1 | TU001 | Front end | L104 | 233383 | NMC-6070 <G/W> | |
| | | 240088 | L152 | 232139 | NMIF-4062 | |
| | | 240089 | FE337-A07 <D> FE415-G11 <G/W> | | | |
| | | | ICs | L103 | 233409M022 | NCH-1272 |
| | Q104 | 22240039 | LA1266 | L201, L202 | 233355A | NMC-4059 |
| | Q107 | 22240090 | LM7001 | L501, L502 | 231176 | S-1.3C |
| | Q201 | 22240242 | AN7470 | | | |
| | Q301 | 22240191 | NJM4565D-D | | | |
| | Q303 | 22240280 | LC7821N | L151 | 232148 | NMRF-7050 |
| | Q304 | 22240339 | LC7823N | | | |
| Q361 | 22240247 | BA15218N | X101, X103 | 3010071 | SFE10.7MA5 <D> | |
| Q362 | 22240247 or 22240293 | BA15218N or NJM4558L-D | X101-X103 | 3010137 | SFE10.7MMK <G/W> | |
| Q901 | 222780122NEC | 78M12 | X151 | 3010123 | SFZ-450JL | |
| Q902 | 222780565JRC | 78M56 | X152 | 3010076 | BFU-450C | |
| 2 | | | | | X'tal | |
| | | | | | 3010141 | XTL-7.2M |
| | | | Transistors | | | |
| | Q101 | 2211723 | 2SC1923-O | | | |
| | Q102 | 2210746 | 2SC945A-P <G/W> | C001, C108 | 354741019 | 100 μ F, 16V, Elect. |
| | Q103, Q106 | 2211183 or 2211255 | 2SC1740-R or 2SC1815-GR | C106 | 354784799 | 0.47 μ F, 50V, Elect. |
| | Q105 | 2212445 | 2SK365-GR | C107 | 354742209 | 22 μ F, 16V, Elect. |
| | Q108, Q109 | 2213510 | DTA114ES | C112 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) |
| | Q202-Q204 | 2211945 | 2SK246-GR | C113 | 354784799 | 0.47 μ F, 50V, Elect. |
| | Q205, Q206 | 2212794 | 2SD1468-R | C116 | 371122234 | 0.022 μ F \pm 5%, 50V, Mylar |
| Q207 | 2213510 | DTA114ES | C117 | 371123334 | 0.033 μ F \pm 5%, 50V, Mylar | |
| Q305, Q306 | 2211183 or 2211255 | 2SC1740-R or 2SC1815-GR | C118 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) | |
| Q391 | 221282 | DTC144ES | C119 | 354782299 | 0.22 μ F, 50V, Elect. | |
| Q501, Q502 | 2213676 or 2213677 | 2SC3067-F or 2SC3067-G | C123 | 391921017 | 100 μ F, 6.3V, Elect. (RA2) | |
| Q503, Q504 | 2213074 or 2211455 | 2SA933-R or 2SA1015-GR | C124 | 354741019 | 100 μ F, 16V, Elect. | |
| Q507, Q508 | 2211732 or 2211733 | 2SC1845-F or 2SC1845-E | C154 | 354780479 | 4.7 μ F, 50V, Elect. | |
| Q509, Q510 | 2211183 or 2211255 | 2SC1740-R or 2SC1815-GR | C155-C157 | 391941007 | 10 μ F, 16V, Elect. (RA2) | |
| Q511, Q512 | 2211353 or 2211354 | 2SA949-O or 2SA949-Y | C159 | 371123334 | 0.033 μ F \pm 5%, 50V, Mylar | |
| Q513, Q514 | 2211633 or 2211634 | 2SC2229-O or 2SC2229-Y | C160 | 371122234 | 0.022 μ F \pm 5%, 50V, Mylar | |
| Q651-Q653 | 2213640 | DTC123JS | C201 | 354744719 | 470 μ F, 16V, Elect. | |
| Q872 | 2213510 | DTA114ES | C202 | 354742209 | 22 μ F, 16V, Elect. | |
| Q903 | 2211353 or 2211354 | 2SA949-O or 2SA949-Y | C205 | 354782299 | 0.22 μ F, 50V, Elect. | |
| 3 | | | C206 | 354780109 | 1 μ F, 50V, Elect. | |
| | | | C207 | 354780339 | 3.3 μ F, 50V, Elect. | |
| | | | C208 | 370134714 | 470pF \pm 5%, 100V, APS | |
| | | | C209 | 374724734 | 0.047 μ F \pm 5%, 50V, Plastic(TF) | |
| | | | C211, C212 | 374721824 | 1800pF \pm 5%, 50V, Plastic(TF) <D> | |
| | | | | | 374721224 | 1200pF \pm 5%, 50V, Plastic(TF) <G> |
| | | | | | 374721524 | 1500pF \pm 5%, 50V, Plastic(TF) <W> |
| | | | | C213, C214 | 354742209 | 22 μ F, 16V, Elect. |
| | | | | C215, C216 | 391941007 | 10 μ F, 16V, Elect. (RA2) |
| | | | | C217, C218 | 371128224 | 8200pF \pm 5%, 50V, Mylar |
| 4 | | | C219, C220 | 374726224 | 6200pF \pm 5%, 50V, Plastic(TF) <D> | |
| | | | | | 374721824 | 1800pF \pm 5%, 50V, Plastic(TF) <G/W> |
| | | | | C221 | 374721034 | 0.01 μ F \pm 5%, 50V, Plastic(TF) |
| | | | | C222 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) |
| | | | | C303, C304 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) |
| | | | | C305, C306 | 373302214 | 220pF \pm 5%, 125V, PP <G/W> |
| | | | | C307, C308 | 373301024 | 1000pF \pm 5%, 125V, PP <G/W> |
| | | | | C309, C310 | 391921017 | 100 μ F, 6.3V, Elect. (RA2) |
| | | | | C311, C312 | 374726224 | 6200pF \pm 5%, 50V, Plastic(TF) |
| | | | | C313, C314 | 374721824 | 1800pF \pm 5%, 50V, Plastic(TF) |
| 5 | | | C315, C316 | 391941007 | 10 μ F, 16V, Elect. (RA2) | |
| | | | C317, C318 | 354744719 | 470 μ F, 16V, Elect. | |
| | | | C331, C332 | 373301014 | 100pF \pm 5%, 125V, PP <G/W> | |
| | | | C341, C342 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) | |
| | | | C343-C346 | 391941007 | 10 μ F, 16V, Elect. (RA2) | |
| | | | C363, C364 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) | |
| | | | C367 | 354784799 | 0.47 μ F, 50V, Elect. | |
| | D101, D102 | 223132 | 1K60 | | | |
| | D103 | 224450512 | MTZ5.1B | | | |
| | D104 | 223163 | 1SS133 | | | |
| D201, D202 | 223163 | 1SS133 | | | | |
| D381 | 224450623 | MTZ6.2C | | | | |
| D382, D383 | 223163 | 1SS133 | | | | |
| D391 | 223163 | 1SS133 | | | | |
| D501-D504 | 223163 | 1SS133 <D/W> | | | | |
| D505, D506 | 223163 | 1SS133 | | | | |
| D651-D653 | 223163 | 1SS133 | | | | |
| D901 | 22380024 | KBU4D | | | | |
| D902, D903 | 224451303 | MTZ13C | | | | |
| D904-D908 | 22380035 | GP104003E | | | | |
| D909, D913 | 223163 | 1SS133 | | | | |
| D911, D912 | 22380035 | GP104003E | | | | |
| D914 | 224452704 | MTZ27D | | | | |
| D915, D916 | 223163 | 1SS133 | | | | |
| D993, D994 | 223163 | 1SS133 | | | | |
| | | Transformers | | | | |
| L101 | 233401 | NFIF-4072 | | | | |
| L102 | 233402 | NFIF-4073 | | | | |

SC

PRINTED CIRCUIT BOARD PARTS LIST

SPEAKER TERMINAL PC BOARD (NAETC-3871-1/1A)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|--------------------------------|
| P501, P502 | 25060110 | NTM-4PDMN44, Speaker terminals |

HEADPHONE TERMINAL PC BOARD (NAETC-3872-1/1A)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|--------------------------------------|
| P503 | 25045256 | YKB21-5010, Headphone terminal <D/W> |
| | 25045255 | YKB21-5009, Headphone terminal <G> |

VIDEO TERMINAL PC BOARD (NAETC-3873-1/1A)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|---------------------|--------------------|------------------------------------|
| ICs | | |
| Q251 | 222840661 | 4066B |
| Q281 | 222780053 | 78L05 |
| Q282 | 22240345 | CX20106A |
| Transistors | | |
| Q252-Q255 | 2211183 or 2211255 | 2SC1740-R or 2SC1815-GR |
| Q256 | 2213074 or 2211455 | 2SA933-R or 2SA1015-GR |
| Q271 | 221282 | DTC144ES <D> |
| Diodes | | |
| D281, D285 | 223163 | 1SS133 |
| Capacitors | | |
| C251, C252 | 354724719 | 470 μ F, 6.3V, Elect. |
| C253-C255 | 391941007 | 10 μ F, 16V, Elect. (RA2) |
| C283 | 391941007 | 10 μ F, 16V, Elect. (RA2) |
| C284 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) |
| C285 | 354780109 | 1 μ F, 50V, Elect. |
| C286 | 354780339 | 3.3 μ F, 50V, Elect. |
| C289 | 391921017 | 100 μ F, 6.3V, Elect. (RA2) |
| Terminals | | |
| P251 | 25045192 | NPJ-4PDBL76, Video |
| P271 | 25045172 | HSJ-1003-01-020, RI |
| P281 | 25045293 | HSJ-1003-01-012, RR (Room to Room) |
| P491 | 25045171 | NPJ-4PDBL65, PRE-MAIN <D> |
| Sockets | | |
| J1.252 | 25050267 | NSCT-3P95 |
| P404 | 2000562 | NSAS-6P518 <D> |
| Plug | | |
| P402a | 25055133 | NPLG-3P117 <D> |
| Shield plate | | |
| | 27150294 | <D> |

AC OUTLET TERMINAL PC BOARD (NAETC-3879-1) (Only 120V model)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|------------|-----------------------|
| P902 | 25050409 | NSCT-4P234, AC outlet |
| P904 | 2009990078 | NSAS-4P0115, Socket |

AC OUTLET TERMINAL PC BOARD (NAETC-3880-1/1A) (Only 220V and Worldwide models)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|------------|----------------------------------------|
| P902, P903 | 25050410 | NSCT-2P235, AC outlet |
| F903a | 25050065 | YSH-403T, Fuseholders <G> |
| F903 | 252075 | 2.5A-SE-EAK, Primary for AC outlet <G> |
| P904a | 2065543341 | Cord ass'y |
| P904b | 2065543348 | Cord ass'y |

PREAMPLIFIER PC BOARD (NAAF-3876-1/1A)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|--------------------|--------------------|------------------------------------------|
| IC | | |
| Q401 | 22240191 | NJM4565D-D |
| Transistors | | |
| Q403, Q404 | 2211945 | 2SK246-GR |
| Q405, Q406 | 2213631 or 2213632 | RN1241-A or RN1241-B |
| Capacitors | | |
| C401, C402 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) |
| C407, C408 | 391941007 | 10 μ F, 16V, Elect. (RA2) |
| C409, C410 | 374723334 | 0.033 μ F \pm 5%, 50V, Plastic(TF) |
| C411, C412 | 374723344 | 0.33 μ F \pm 5%, 50V, Plastic(TF) |
| C413, C414 | 374724724 | 4700pF \pm 5%, 50V, Plastic(TF) |

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|-----------|------------------------------------------|
| C417, C418 | 374723934 | 0.039 μ F \pm 5%, 50V, Plastic(TF) |
| C419, C420 | 391980227 | 2.2 μ F, 50V, Elect. (RA2) |
| C421-C424 | 354781099 | 0.1 μ F, 50V, Elect. |
| C425-C428 | 374721024 | 1000pF \pm 5%, 50V, Plastic(TF) |
| C431, C432 | 354741009 | 10 μ F, 16V, Elect. <D> |
| | 354744709 | 47 μ F, 16V, Elect. <G/W> |

Resistors

| | | |
|------------|---------|------------------------------------|
| R405 | 5104270 | N11RHC250KWT25Z, Variable, BALANCE |
| R413, R414 | 5104269 | N14RHC50KC25Z, Variable, BASS |
| R421, R422 | 5104269 | N14RHC50KC25Z, Variable, TREBLE |
| R435, R436 | 6182006 | N25LGL200KRD10Z, Slide, S.T.C. |
| R441, R442 | 6182006 | N25LGL200KRD10Z, Slide, D.B.E. |

Socket

| | | |
|------|---------|----------------|
| P402 | 2000630 | NSAS-6P586 <D> |
|------|---------|----------------|

VOLUME INDICATOR PC BOARD (NADIS-3877-1)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|------------------|------------------------------------|
| D871 | 225241 or 225242 | SEL2210R-C or SEL2210R-D, L.E.E.D. |
| | 27190545 | Holder, LED |

NOTE: <D>: Only 120V model
<G>: Only 220/240V models
<W>: Only Worldwide model

POWER SUPPLY PC BOARD (NAPS-3878-1/1A/1B/1C)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|--------------------|------------|--------------------------------|
| Transistors | | |
| Q951 | 221282 | DTC144ES |
| Q952 | 2213650 | DTD113ZS |
| Diodes | | |
| D951-D954 | 22380035 | GP104003E |
| D955 | 223163 | 1SS133 |
| D991, D992 | 223163 | 1SS133 |
| Transformer | | |
| T902 | 2300493 | NPT-1049D, Power <D> |
| | 2300494 | NPT-1049G, Power <G> |
| | 2300495 | NPT-1049DG, Power <W> |
| | 2300496 | NPT-1049Q, Power <Q> |
| Capacitors | | |
| C901 | 3500065A | DE7150FZ103PAC400V/125V, IS |
| C952 | 354761019 | 100 μ F, 35V, Elect. |
| Resistors | | |
| R901 | 431523355 | 3.3Mohm, 1/2W, Solid <D> |
| R951 | 442520824 | 8.2ohm, 1/2W, Metal oxide film |
| Relay | | |
| RL901 | 25065269 | NRL-1P5A-DC12-36 <D> |
| | 25065248 | NRL-1P15A-DC12-29 <G/W/Q> |
| Socket | | |
| J1.901 | 25050268 | NSCT-4P96 |
| Fuseholders | | |
| F901a | 250113 | SN5051 <D/W> |
| F902a | 25050065 | YSH403T <G/W/Q> |
| Fuse | | |
| F901 | 252050 | 5A (ST-6), Primary <D/W> |
| F902 | 252075 | 2.5A-SE-EAK, Primary <G/W/Q> |
| Bracket | | |
| | 27141059 | Ground <D> |
| Label | | |
| | 29360626-1 | Fuse <D> |

NOTE: <D>: Only 120V model
<G>: Only 220V model
<Q>: Only 240V model
<W>: Only Worldwide model

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

