

# ONKYO® SERVICE MANUAL

## Infrared Wireless Remote Controlled Stereo preamplifier MODEL P-3150V



UD

120V AC, 60Hz

### SAFETY-RELATED COMPONENT WARNING!!

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

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

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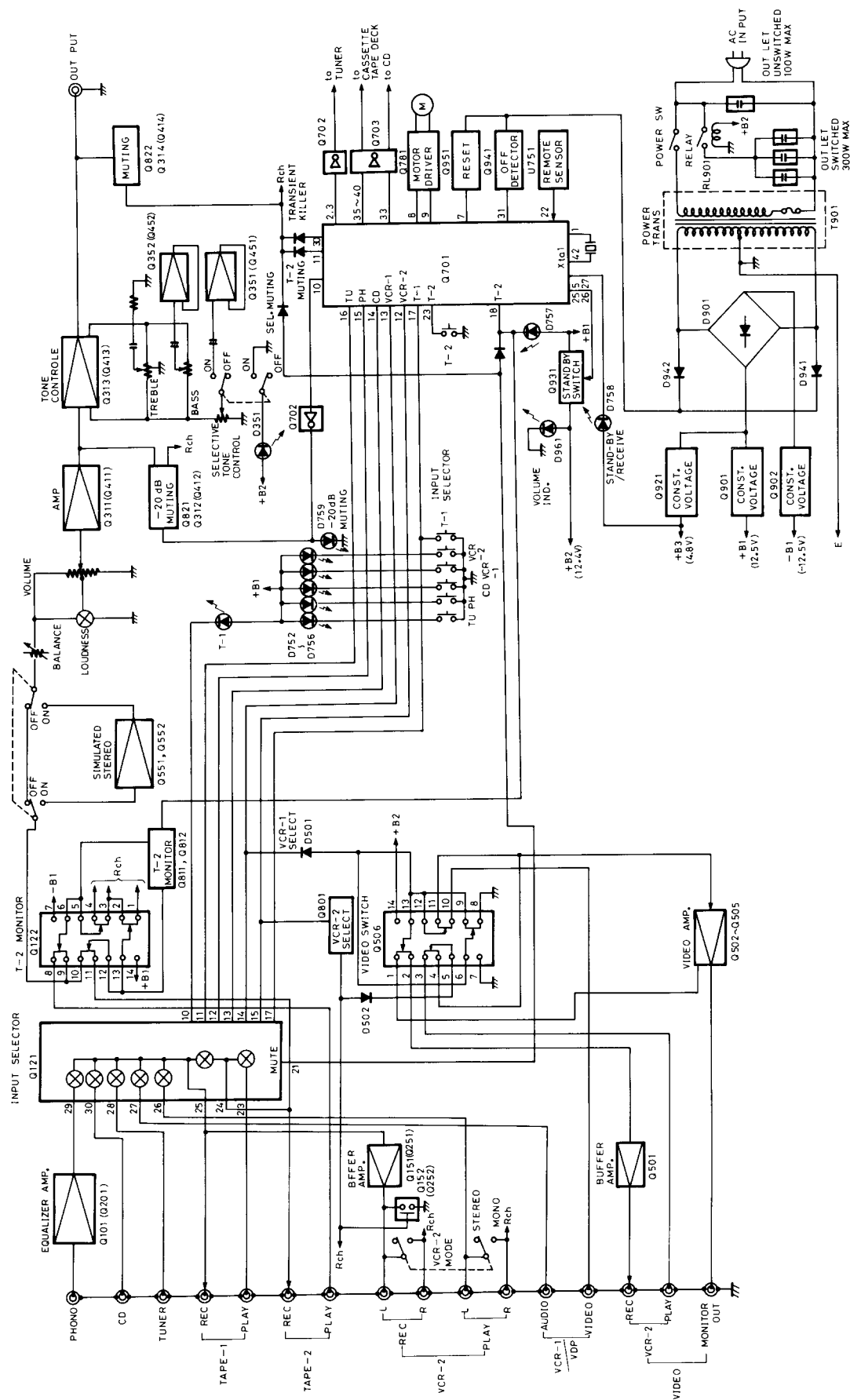
**ONKYO®**  
**AUDIO COMPONENTS**

## **SPECIFICATIONS**

|                             |                                                                                                                         |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Rated Output and Impedance: | 1V/3.3 Kohms MAX 5V                                                                                                     |
| Total Harmonic Distortion:  | 0.009%                                                                                                                  |
| IM Distortion:              | 0.09%                                                                                                                   |
| Frequency Response:         | 15 – 30,000 Hz $\pm$ 1dB                                                                                                |
| Sensitivity and Impedance:  | Phono: 2.5mV/50 kohms<br>Tuner, CD, Tape Play<br>VCR, VDP Sound: 150mV/50 kohms<br>Tape Rec: 150mV/2.2 kohms<br>(phono) |
| Phono Overload:             | 120mV RMS at 1 kHz, 0.09% THD                                                                                           |
| Bass Control:               | $\pm$ 10 dB at 100Hz                                                                                                    |
| Treble Control:             | $\pm$ 10 dB at 10,000 Hz                                                                                                |
| Selective Tone Control:     | +15 dB at 50Hz<br>+6 dB at 10,000Hz                                                                                     |
| Signal to Noise Ratio:      | Phono: 72dB (IHFA-202,<br>5mV input, 1 V output<br>Tape Play: 80dB (IHF A-202,<br>0.5V input, 1 V output)               |
| Loudness Control:           | +6 dB at 70 Hz, +5 dB at 10 kHz                                                                                         |
| Audio Muting:               | -20dB                                                                                                                   |
| <b>General</b>              |                                                                                                                         |
| Power Supply:               | AC120V, 60Hz                                                                                                            |
| Dimensions (W x H x D):     | 435 x 110 x 273mm<br>17-1/8" x 4-5/16" x 10-3/4"                                                                        |
| Weight:                     | 3.7kg, 8.2 lbs.                                                                                                         |

Specifications and features are subject to change without notice.

## BLOCK DIAGRAM



| Pin No. | Code            | Explanation                                                                                                         |
|---------|-----------------|---------------------------------------------------------------------------------------------------------------------|
| 11      | MUT-2           | Muting signal output terminal for TAPE-2 change-over "H" during 200mS change-over time to TAPE-2                    |
| 12      | VCR-2           | Selector signal output terminal for VCR-2 change-over "L" during 200mS after pushing remote control VCR-2 KEY       |
| 13      | VCR-1           | Selector signal output terminal for VCR-1 change-over "L" during 200mS after pushing remote control VCR-1 KEY       |
| 14      | CD              | Selector CD change-over signal output terminal "L" during 200mS after pushing remote control CD KEY                 |
| 15      | PH              | Selector PHONO change-over signal output terminal "L" during 200mS after pushing remote control PHONO KEY           |
| 16      | TU              | Selector signal output terminal for TUNER change-over "L" during 200mS after pushing remote control TUNER KEY       |
| 17      | T-1             | Selector signal output terminal for TAPE-1 change-over "L" during 200mS after pushing remote control TAPE-1 KEY     |
| 18      | T-2             | Selector signal output terminal for TAPE-1 change-over Switching of "H" ↔ "L" by means of remote control TAPE-2 KEY |
| 21      | GND             | GND terminal                                                                                                        |
| 22      | REM IN          | Remote control signal input terminal                                                                                |
| 23      | T-2 CTL         | TAPE-2 ON/OFF control input terminal<br>T-2 output is changed-over with "L" input                                   |
| 24      | PROTECT         | Protection function input terminal; with "H" input, output SP CTL "H"                                               |
| 25      | CONT IN         | Power source condition input terminal; connects to POWER output; POWER ON with "H"                                  |
| 26      | POWER           | Power source control output terminal<br>Switching of "H" ↔ "L" (ON = "H")                                           |
| 27      | STBY            | Terminal for indication during STANDBY; POWER reversing output                                                      |
| 28      | INIT            | Output terminal for start of selector<br>"L" during 300mS when power source is ON                                   |
| 29      | B. UP           | Output terminal for back up during STANDBY                                                                          |
| 30      | SP CTL          | Speaker control output terminal ("L" = speaker output ON)                                                           |
| 31      | M. OFF          | Main power source OFF detection terminal                                                                            |
| 33      | CD MODE         | Serial signal output terminal for CD control use                                                                    |
| 35      | REW             | Cassette deck control signal output terminal<br>"H" during 200mS after pushing remote control REW KEY               |
| 36      | FF              | Cassette deck control signal output terminal<br>"H" during 200mS after pushing remote control FF KEY                |
| 37      | REC             | Cassette deck control signal output terminal<br>"H" during 200mS after pushing remote control REC KEY               |
| 38      | STOP            | Cassette deck control signal output terminal<br>"H" during pushing of remote control STOP KEY                       |
| 39      | PAUSE           | Cassette deck control signal output terminal<br>"H" during 200mS after pushing remote control PAUSE KEY             |
| 40      | PLAY            | Cassette deck control signal output terminal<br>"H" during 200mS after pushing remote control PLAY KEY              |
| 41      | V <sub>DD</sub> | Power source terminal                                                                                               |
| 42      | Extal           | Ceramic resonator connection terminal                                                                               |

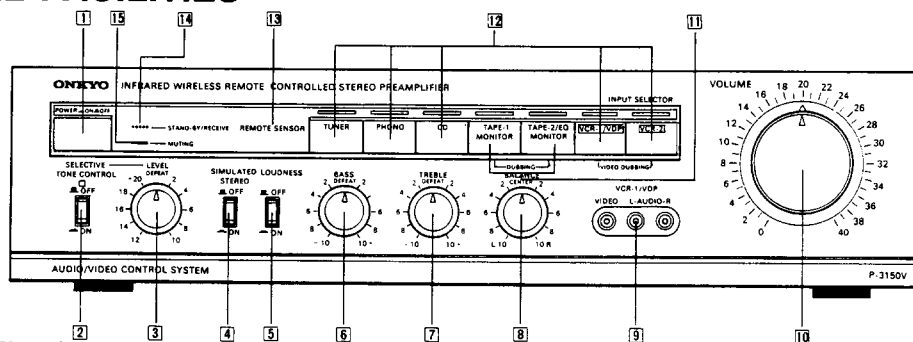


## CHASSIS-EXPLODED VIEW PARTS LIST

| REF. NO. | PART NO.   | DESCRIPTION                                          |
|----------|------------|------------------------------------------------------|
| 1        | 27110318   | FRONT BRACKET                                        |
| 5        | 27100114   | CHASSIS                                              |
| 7        | 27273036A  | JOINT                                                |
| 12       | 27120924A  | BACK PANEL                                           |
| 13       | 27300750   | BUSHING (CORD)                                       |
| 15       | 27190513   | HOLDER                                               |
| 16       | 27190266   | HOLDER                                               |
| 18       | 831130088  | TAP-TIGHT SCREW 3TTW + 8B                            |
| 19       | 82143006   | PAN-HEAD SCREW 3P + 6FN BC                           |
| 20       | 834430068  | TAP-TIGHT SCREW 3TTS + 6BBC                          |
| 32       | 28184342   | TOP COVER                                            |
| 33       | 834430088  | TAP-TIGHT SCREW 3TTS + 8BBC                          |
| 36       | 1A043121   | FRONT PANEL                                          |
| 42       | 27262415   | PLATE (T)                                            |
| 47       | 27175142   | LEG                                                  |
| 51       | 28322622A  | KNOB (TONE)                                          |
| 52       | 28322213   | KNOB (PUSH)                                          |
| 53       | 28322795A  | KNOB (POW)                                           |
| 54       | 28322620A  | KNOB AS (VOL)                                        |
| ▲ T901   | 2300175    | POWER TRANSFORMER NPT-947D                           |
| ▲ P901   | 253123 or  | AC CORD AS-UC-6 #18 or                               |
|          | 253136 or  | AC CORD AS-UC-6 #18 or                               |
|          | 253140     | AC CORD AS-UC-6 #18                                  |
| ▲ P902   | 25050290   | AC OUTLET NSCT-2P118T                                |
| ▲ P903   | 25050336   | AC OUTLET NSCT-6P163                                 |
| U1       | 1A043580-1 | NAAF-2880-1, MAIN PC BOARD ASS'Y                     |
| U2       | 1A043581-1 | NASW-2881-1, SIMULATED STEREO PC BOARD ASS'Y         |
| U3       | 1A043582-1 | NASW-2882-1, PWOER SWITCH PC BOARD ASS'Y             |
| U4       | 1A043583-1 | NADIS-2883-1, VOLUME LED PC BOARD ASS'Y              |
| U5       | 1A043584-1 | NAETC-2884-1, VIDEO CIRCUIT PC BOARD ASS'Y           |
| U6       | 1A043585-1 | NAETC-2885-1, VCR-1/VDP INPUT TEMINAL PC BOARD ASS'Y |
| U7       | 1A043586-1 | NATEC-2886-1, MOTOR DRIVE PC BOARD ASS'Y             |
| U8       | 1A043587-1 | NAETC-2887-1, MOTOR CIRCUIT PC BOARD ASS'Y           |

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

## FRONT PANEL FACILITIES



1. Power Switch (POWER)
2. Selective Tone Control Switch and Indicator (SELECTIVE TONE CONTROL)
3. Selective Tone Control (SELECTIVE TONE CONTROL LEVEL)
4. Simulated Stereo (SIMULATED STEREO)
5. Loudness Control (LOUDNESS)
6. Bass Control (BASS)
7. Treble Control (TREBLE)
8. Balance Control (BALANCE)
9. Video Cassette Recorder or Video Disc Player Input Jack (VCR-1/VDP)
10. Volume Control and Indicator (VOLUME)
11. Tape Monitor Switches and Indicators (MONITOR)  
TAPE-1, TAPE-2/EQ
12. Input Selector Switch and Indicators (INPUT SELECTOR)  
TUNER, PHONO, CD, VCR-1/VDP, VCR-2
13. Remote Control Sensor
14. Stand-By/Receive Indicator
15. Muting Indicator

## PRINTED CIRCUIT BOARD-PARTS LIST

## MAIN PC BOARD (NAAF-2880-1)-PARTS LIST

| CIRCUIT NO.        | PART NO.   | DESCRIPTION                    |
|--------------------|------------|--------------------------------|
| <b>ICs</b>         |            |                                |
| Q101, (Q201)       | 222534     | NJM4559DX                      |
| Q313, (Q413)       |            |                                |
| Q121               | 222996     | LC7818                         |
| Q122               | 22240025   | LC4966                         |
| Q151, (Q251)       | 222502     | NJM4558DX                      |
| Q311, (Q411)       |            |                                |
| Q701               | 22240024   | LM6405G-2077                   |
| Q702               | 222919     | TD62554S                       |
| Q703               | 222945     | TD62504P                       |
| <b>Transistors</b> |            |                                |
| Q152, Q252         | 2212285 or | 2SC2878A or                    |
| Q312, Q314         | 2212286    | 2SC2878B                       |
| Q412, Q414         |            |                                |
| Q801, Q812         | 2211455 or | 2SA1015GR or                   |
| Q821, Q822         | 2210803    | 2SA733P                        |
| Q811, Q941         | 2211255 or | 2SC1815GR or                   |
| Q951               | 2210746    | 2SC945A                        |
| Q901, Q921         | 2201754 or | 2SD1913R or                    |
|                    | 2201755    | 2SD1913S                       |
| Q902               | 2201764 or | 2SB1274R or                    |
|                    | 2201765    | 2SB1274S                       |
| Q931               | 2211504    | 2SA950Y                        |
| <b>Diodes</b>      |            |                                |
| D701~D704          | 223145 or  | 1S2076TD or                    |
| D951               | 223124 or  | 1S2473 or                      |
|                    | 223150     | US1040                         |
| D901               | 223862 or  | WL01 or                        |
|                    | 223890     | W01RL                          |
| D902, D903         | 2239652 or | RD13EB2 or                     |
|                    | 2243242    | MTZ13B                         |
| D921               | 2239471 or | RD5.6EB1 or                    |
|                    | 2243151    | MTZ5.6A                        |
| D941, D942         | 223880F    | GP101N4003                     |
| <b>Transducer</b>  |            |                                |
| X701               | 3010099    | CSA4.00MG, Ceramic             |
| <b>Capacitors</b>  |            |                                |
| C101, C107         | 354780229  | 2.2 $\mu$ F, 50V, Elect.       |
| C151, C152         |            |                                |
| C201, C207         |            |                                |
| C251, C252         |            |                                |
| C311, C313         |            |                                |
| C314, C316         |            |                                |
| C411, C413         |            |                                |
| C414, C416         |            |                                |
| C104, C204         | 354721019  | 100 $\mu$ F, 6.3V, Elect.      |
| C312, C412         |            |                                |
| C703               |            |                                |
| C105, C205         | 371126224  | 6200pF, 50V, Mylar             |
| C106, C206         | 371121824  | 1800pF, 50V, Mylar             |
| C108, C109         | 354742219  | 220 $\mu$ F, 16V, Elect.       |
| C153, C253         | 354780109  | 1 $\mu$ F, 50V, Elect.         |
| C801, C821         |            |                                |
| C154, C155         | 354780339  | 3.3 $\mu$ F, 50V, Elect.       |
| C317~C320          |            |                                |
| C705, C706         |            |                                |
| C803, C804         |            |                                |
| C802               | 354781099  | 0.1 $\mu$ F, 50V, Elect.       |
| C851               | 379122235  | 0.022 $\mu$ F, 50V, Film (DEW) |
| C904               | 354763329  | 3300 $\mu$ F, 35V, Elect.      |
| C905               | 354781029  | 1000 $\mu$ F, 35V, Elect.      |
| C906, C907         | 354762219  | 220 $\mu$ F, 35V, Elect.       |
| C921               |            |                                |
| C910, C911         | 354741019  | 100 $\mu$ F, 16V, Elect.       |
| C912, C913         | 354744719  | 470 $\mu$ F, 16V, Elect.       |

|                  |             |                                         |
|------------------|-------------|-----------------------------------------|
| C923, C924       | 354722219   | 220 $\mu$ F, 6.3V, Elect.               |
| C931             | 354744709   | 47 $\mu$ F, 16V, Elect.                 |
| C941             | 354764709   | 47 $\mu$ F, 35V, Elect.                 |
| C951             | 354761009   | 10 $\mu$ F, 35V, Elect.                 |
| <b>Resistors</b> |             |                                         |
| R707~R713        | 49121392407 | 3.9K $\Omega$ $\times$ 7, 1/8W, Network |
| R901, R902       | 442520104 F | 1 $\Omega$ , 1/2W, Metal oxide film     |
| R903             | 441520334 F | 3.3 $\Omega$ , 1/2W, Metal oxide film   |
| R904             | 441524704 F | 47 $\Omega$ , 1/2W, Metal oxide film    |
| R921             | 441724704 F | 47 $\Omega$ , 2W, Metal oxide film      |
| R941             | 441622224 F | 2.2k $\Omega$ , 1W, Metal oxide film    |
| <b>Switch</b>    |             |                                         |
| S121             | 25065286    | NSS-22112, Slide                        |
| <b>Terminals</b> |             |                                         |
| P101~P103        | 25045213    | NPJ-6PDBL92                             |
| P301             | 25045182    | NPJ-2PDBL72                             |
| <b>Sockets</b>   |             |                                         |
| P701             | 25050294    | NSCT-8P121, DIN socket                  |
|                  | 2000558     | NSAS-6P514, Socket ass'y                |
|                  | 2000557     | NSAS-6P513, Socket ass'y                |
|                  | 25050270    | NSCT-6P-98, Jamper socket               |
| <b>Jacks</b>     |             |                                         |
| P702, P703       | 25045215    | S-G8515                                 |
| <b>Radiator</b>  |             |                                         |
|                  | 27160166    |                                         |

## SIMULATED STEREO PC BOARD (NASW-2881-1)-PARTS LIST

| CIRCUIT NO.                 | PART NO.    | DESCRIPTION                |
|-----------------------------|-------------|----------------------------|
| <b>Photo receiving unit</b> |             |                            |
| → U751                      | 241068      | BX-1407                    |
| <b>ICs</b>                  |             |                            |
| Q351, Q352                  | 222956      | NJM2068DD                  |
| (Q451, Q452)                |             |                            |
| Q551, (Q552)                | 222502      | NJM4558DX                  |
| <b>Diodes</b>               |             |                            |
| D351                        | 225141      | SEL2213C                   |
| D751~D754                   | 225137CG or | SEL2413ECG or              |
| D757                        | 225137DG or | SEL2413EDG or              |
|                             | 225137DY    | SEL2413EDY                 |
| D758, D759                  | 225141      | SEL2213C                   |
| D755, D756                  |             |                            |
| <b>Capacitors</b>           |             |                            |
| C302                        | 371123934   | 0.039 $\mu$ F, 50V, Mylar  |
| C351, C451                  | 371128224   | 8200pF, 50V, Mylar         |
| C352, C452                  | 354780229   | 2.2 $\mu$ F, 50V, Elect.   |
| C551, C554                  |             |                            |
| C353, C453                  | 371125134   | 0.051 $\mu$ F, 50V, Mylar  |
| C354, C357                  | 354780339   | 3.3 $\mu$ F, 50V, Elect.   |
| C358, C454                  |             |                            |
| C555, C556                  |             |                            |
| C751                        |             |                            |
| C355, C356                  | 371122234   | 0.022 $\mu$ F, 50V, Mylar  |
| C455, C456                  |             |                            |
| C402                        | 371123934   | 0.039 $\mu$ F, 50V, Mylar  |
| C552                        | 371121124   | 1100pF, 50V, Mylar         |
| C553                        | 371121234   | 0.012 $\mu$ F, 50V, Mylar  |
| <b>Resistors</b>            |             |                            |
| R302                        | 5104192     | N16RHC250KW25Z, Variable   |
| R351, (R451)                | 5104197     | N16RGH50KRD25Z, Variable   |
| R358, R363                  | 5104196     | N16RGHC100KWT25Z, Variable |
| (R458), (R463)              |             |                            |

|              |                     |              |
|--------------|---------------------|--------------|
|              | <b>Switches</b>     |              |
| S301, (S551) | 25035534            | NPS-222-L496 |
| S351         | 25035552            | NPS-142-L514 |
| S751~S757    | 25035548            | NPS-111-S510 |
|              | <b>Holders</b>      |              |
|              | 27190505            | (LED-7)      |
|              | 27190506            | (LED-3)      |
|              | <b>Shield cover</b> |              |
|              | 27225081            |              |

### POWER SWITCH PC BOARD (NASW-2882-1)-PARTS LIST

| CIRCUIT NO. | PART NO.                         | DESCRIPTION                   |
|-------------|----------------------------------|-------------------------------|
|             | <b>Diodes</b>                    |                               |
| D971        | 223145 or<br>223124 or<br>223150 | 1S2076TD<br>1S2473<br>US1040  |
|             | <b>Capacitors</b>                |                               |
| C901, C902  | 3500065A                         | 0.01 $\mu$ F, AC400V/125V, IS |
|             | <b>Switch</b>                    |                               |
| S901        | 25035550                         | NPS-111-L512P                 |
|             | <b>Relay</b>                     |                               |
| RL901       | 25065269                         | NRL-1P5A-DC12-36              |

### VOLUME LED PC BOARD (NADIS-2883-1)-PARTS LIST

| CIRCUIT NO. | PART NO.  | DESCRIPTION              |
|-------------|-----------|--------------------------|
|             | 225141    | SEL2213C, LED            |
|             | 2000635   | NSAS-4P591, Socket ass'y |
|             | 27190478A | Holder                   |

### VIDEO CIRCUIT PC BOARD (NAETC-2884-1)-PARTS LIST

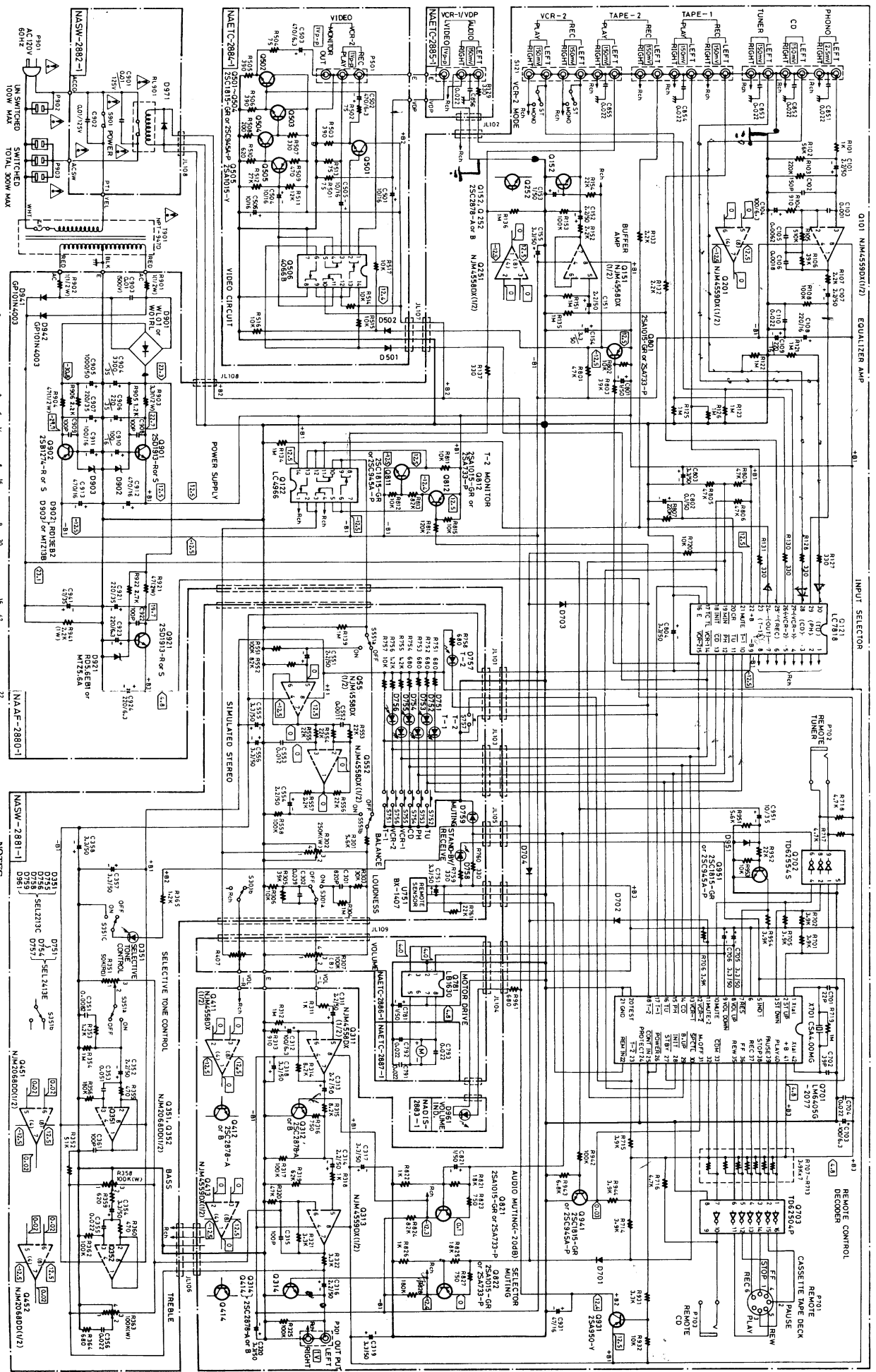
| CIRCUIT NO. | PART NO.                         | DESCRIPTION                        |
|-------------|----------------------------------|------------------------------------|
|             | <b>ICs</b>                       |                                    |
| Q506        | 222575 or<br>222840661           | TC4066BP or<br>4066B               |
|             | <b>Transistors</b>               |                                    |
| Q501~Q504   | 2211255 or<br>2210746            | 2SC1815GR or<br>2SC945AP           |
| Q505        | 2211454                          | 2SA1015Y                           |
|             | <b>Diodes</b>                    |                                    |
| D501, D502  | 223145 or<br>223124 or<br>223150 | 1S2076TD or<br>1S2473 or<br>US1040 |
|             | <b>Capacitors</b>                |                                    |
| C501, C504  | 354741009                        | 10 $\mu$ F, 16V, Elect.            |
| C505, C506  |                                  |                                    |
| C502, C503  | 354724719                        | 470 $\mu$ F, 6.3V, Elect.          |
|             | <b>Terminal</b>                  |                                    |
| P501        | 25045205                         | NPJ-3PDYE085                       |

### VCR-1/VDP INPUT TERMINAL PC BOARD (NAETC-2885-1)-PARTS LIST

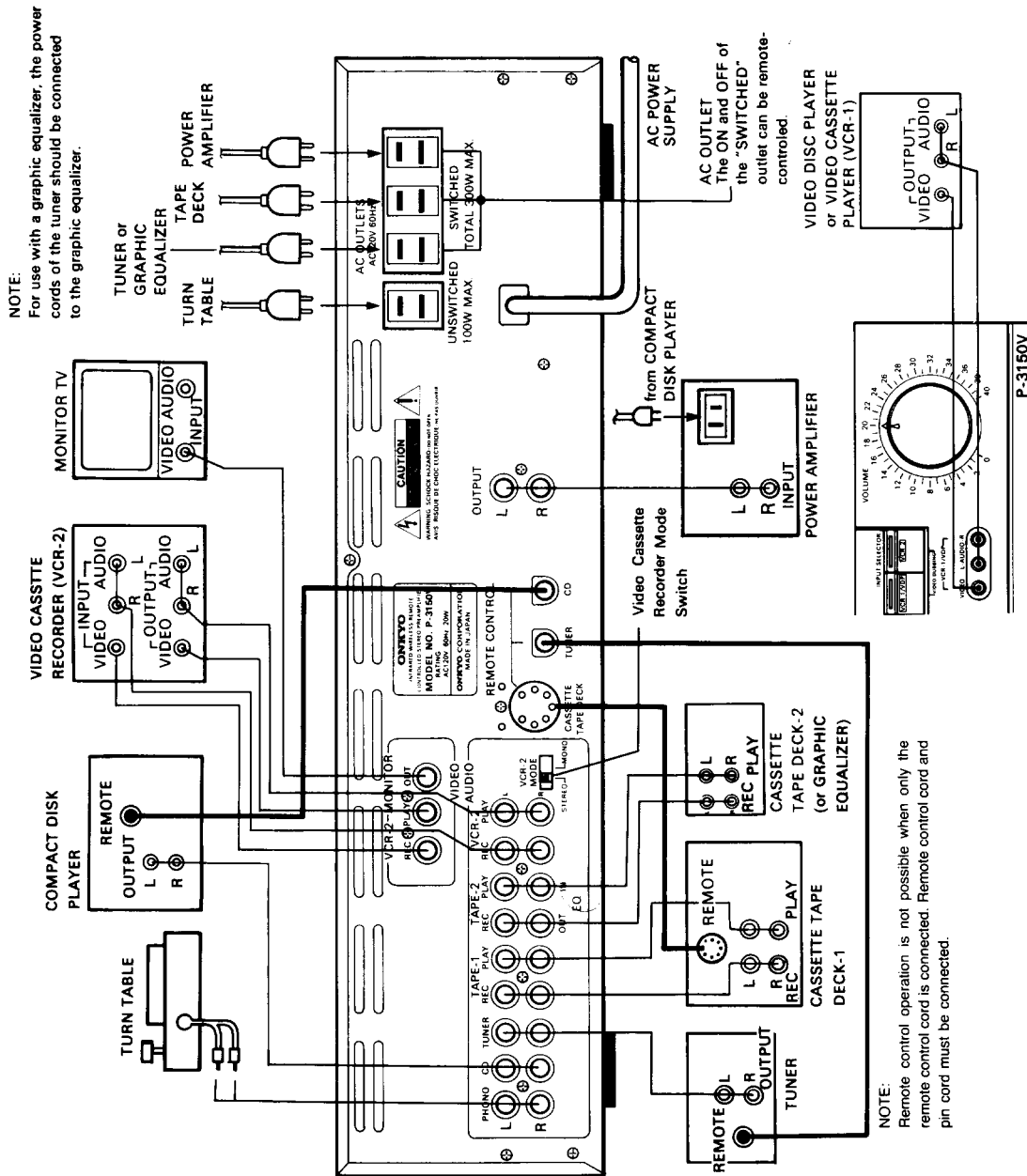
| CIRCUIT NO. | PART NO. | DESCRIPTION                  |
|-------------|----------|------------------------------|
| P104        | 25045206 | NPJ-3PDYE086, Input terminal |

### MOTOR DRIVE PC BOARD (NAETC-2886-1)-PARTS LIST

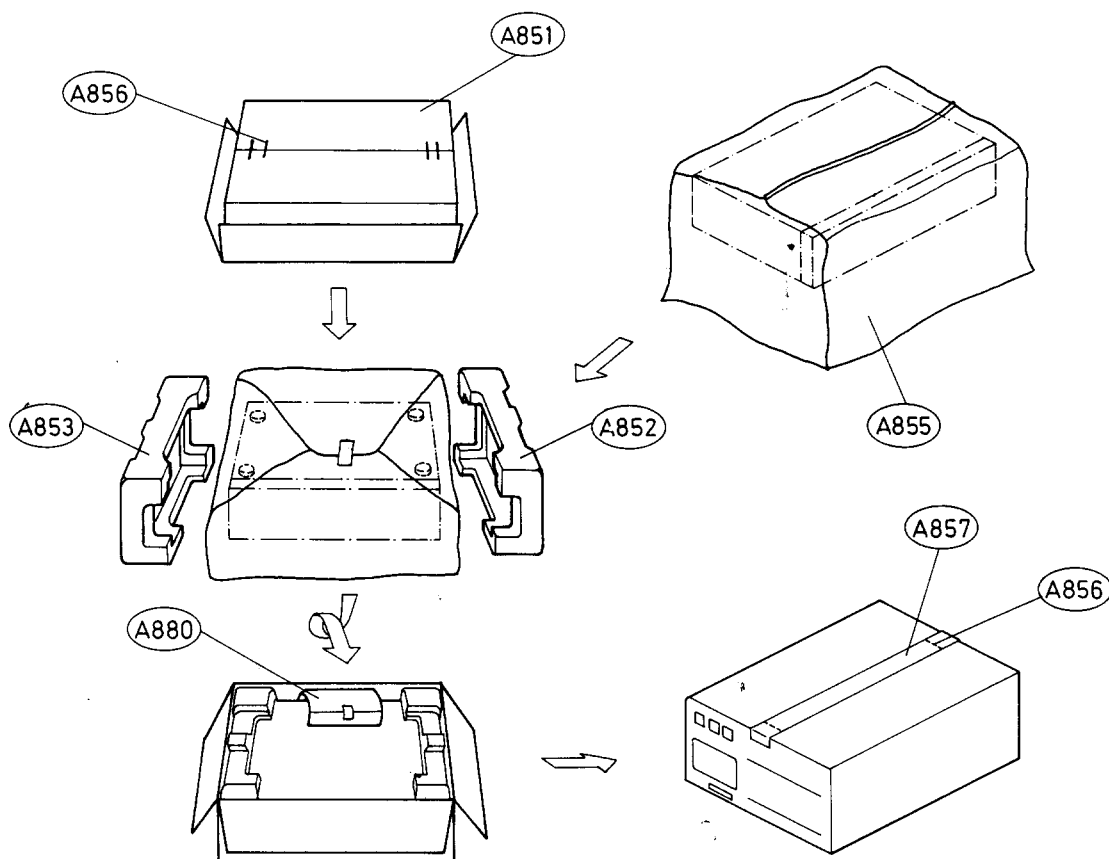
| CIRCUIT NO.  | PART NO.         | DESCRIPTION              |
|--------------|------------------|--------------------------|
|              | <b>IC</b>        |                          |
| Q781         | 222963           | LB1630                   |
|              | <b>Capacitor</b> |                          |
| C781         | 354780109        | 1 $\mu$ F, 50V, Elect.   |
|              | <b>Resistor</b>  |                          |
| R307, (R407) | 5104195          | N16RGL100KBT20, Variable |



## SYSTEM CONNECTIONS



## PACKING PROCEDURES



## PACKING MATERIALS

| REF. NO. | PART NO.            | DESCRIPTION                             |
|----------|---------------------|-----------------------------------------|
| A851     | 29051435A           | MASTER CARTON BOX                       |
| A852     | 29090987            | PAD, L                                  |
| A853     | 29090988            | PAD, R                                  |
| A855     | 29100063            | 750×580mm, POLY-VINYL BAG               |
| A856     | 282301              | SEALING HOOK                            |
| A857     | 260012              | DAMPLON TAPE                            |
| A880     | ACCESSORY BAG ASS'Y |                                         |
|          | 29341094            | INSTRUCTION MANUAL                      |
|          | 29365019            | WARRANTY CARD [N]                       |
|          | 29358002E           | SERVICE STATION LIST [N]                |
|          | 29100006A           | 250×350mm, POLY-VINYL BAG FOR ACCESSORY |
|          | 2010159             | 2.5mm PLUG CORD                         |
|          | 2010141             | CONNECTION CABLE, DIN                   |

NOTE: [N]: Only U.S.A. Models

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