

ONKYO SERVICE MANUAL

CASSETTE TAPE DECK MODEL TA-250



| | |
|----------------|---------------------|
| UP, UP \odot | 230VAC, 50Hz |
| UW | 120/220VAC, 50/60Hz |

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle 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.

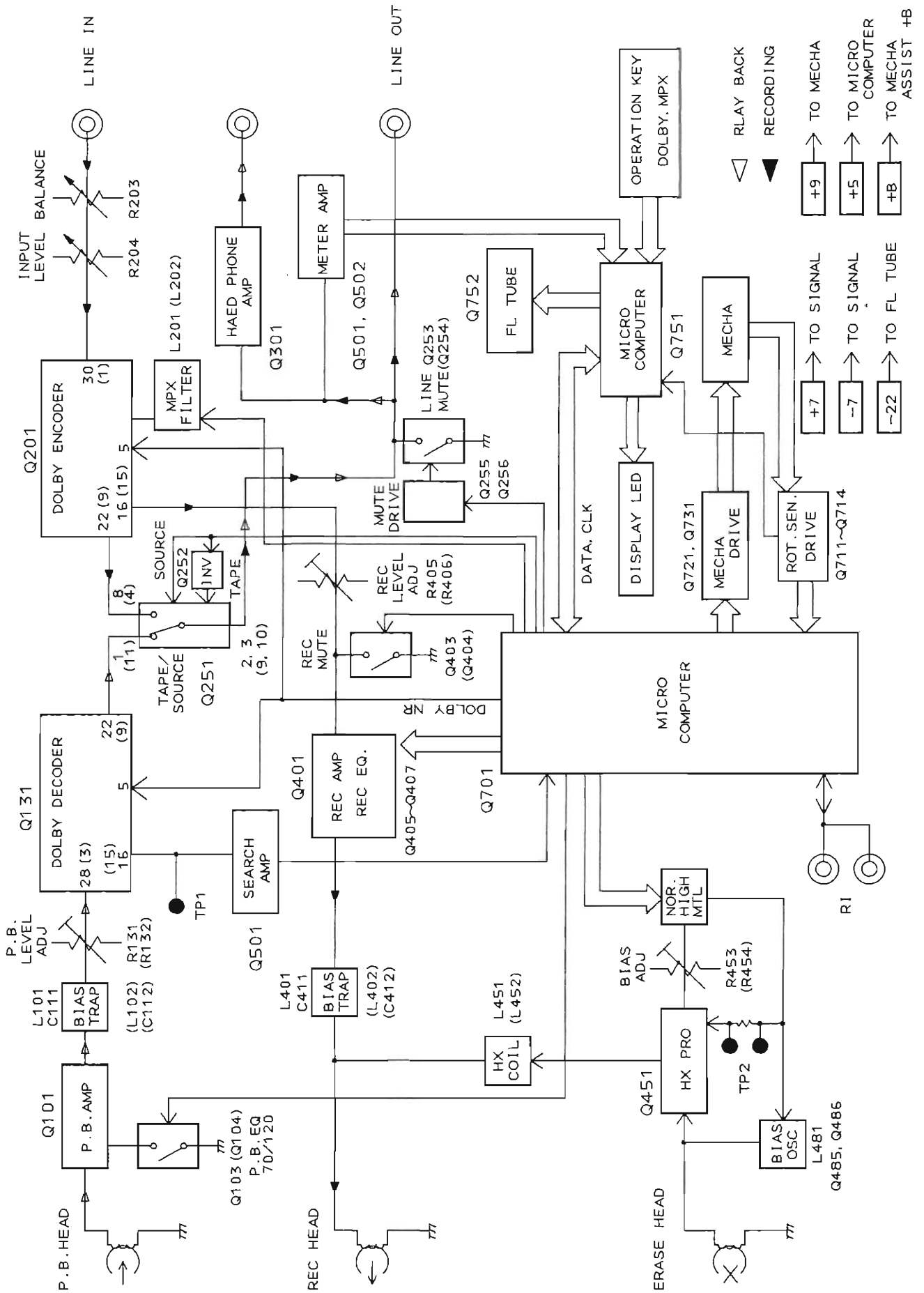
SPECIFICATIONS

| | |
|----------------------|---|
| Track Format: | 4-tracks, 2-channels |
| Erasing System: | AC erase |
| Tape Speed: | 4.8 cm/sec. (1-7/8 i.p.s.) |
| Wow and Flutter: | 0.045% (WRMS) 0.09 (DIN) |
| Frequency Response: | 20—18,000Hz (normal) (30—17,000Hz \pm 3dB) 20—19,000Hz (high) (30—18,000Hz \pm 3dB) 20—20,000Hz (metal) (30—19,000Hz \pm 3dB) |
| S/N Ratio: | 60dB (metal tape, Dolby NR off) A noise reduction of 10dB above 5kHz and 5dB at 1kHz is possible with Dolby B NR. A noise reduction of 20dB at 5kHz is possible with Dolby C NR. |
| Input Jacks: | LINE IN: 2 Input sensitivity: 80 mV Input impedance: 50 kohms |
| Output Jacks: | LINE OUT: 2 Standard output level: 500 mV (0dB) Optimum load impedance: over 50 kohms Headphone jack: 1 Optimum load impedance: 8 to 200 ohms |
| Motors: | DC servo motor: 1 DC motor: 3 |
| Heads: | REC/PB: Special Hard Permalloy x 2 Erase head: Ferrite x 1 |
| Power Supply Rating: | U.K. and Australian models AC 240 V 50 Hz European models (Except U.K.) AC 230 V, 50Hz Worldwide models AC 120 and 220 V, Switchable 50/60 Hz |
| Power Consumption: | 13 watts |
| Dimensions: | 455(W) x 120(H) x 310(D)mm 17 ¹³ / ₁₆ " x 4 ³ / ₄ " x 12 ³ / ₁₆ " |
| Weight: | 5.0 kg. (11.0 lbs.) |

Specifications and external appearance are subject to change without notice because of product improvements.

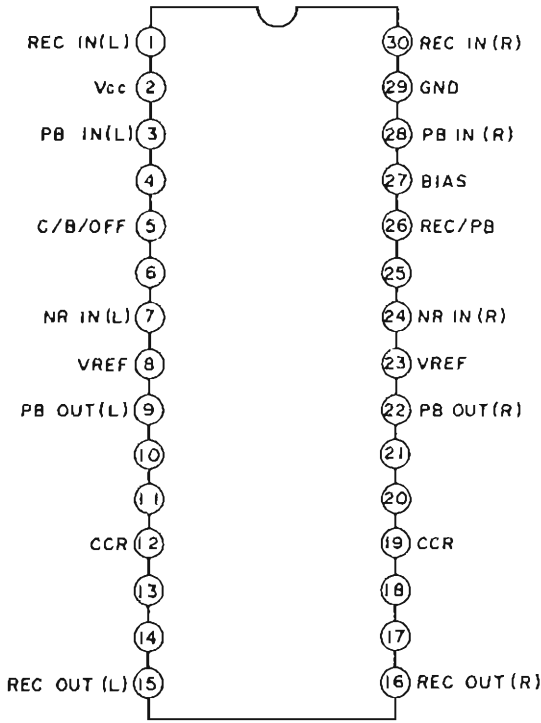
ONKYO
AUDIO COMPONENTS

BLOCK DIAGRAM



IC BLOCK DIAGRAM

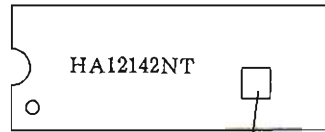
HA12142NT (DOLBY NR)



Precaution in case of replacing DOLBY IC

DOLBY IC(HA12142NT-01) can be divided into five standards. DECODER(Q131)and ENCODER(Q201)are used in pairs. So, please use the same standard IC when you replace one. SN (stock number) is in common with each other.

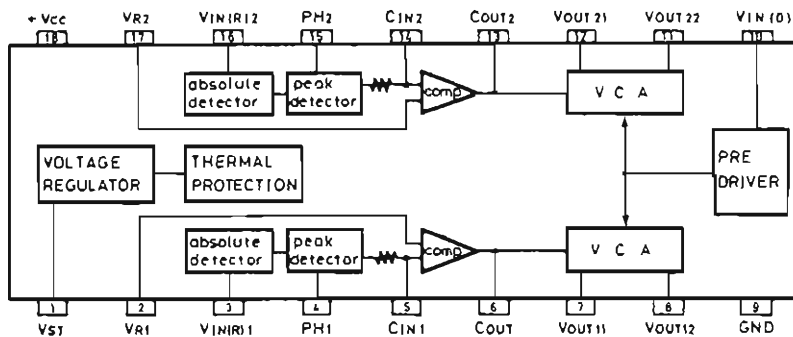
The displays of standard are as follows.



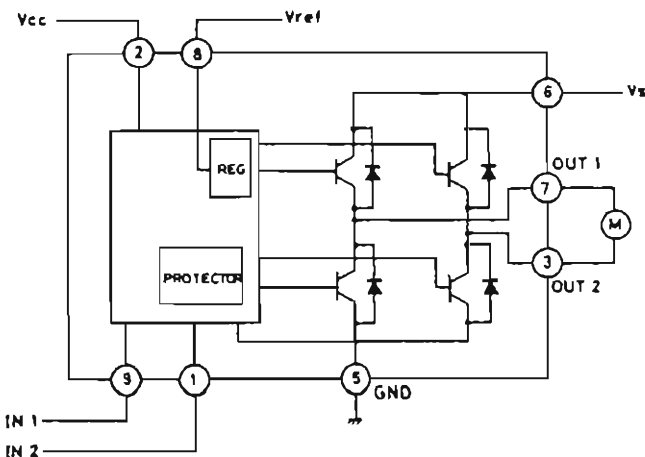
Y
R
G
B
V

Each suffix stands for each standard.

μPC1297CA (HX PRO)



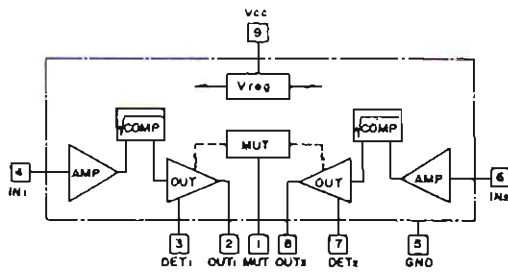
TA7291S (MOTOR DRIVE)



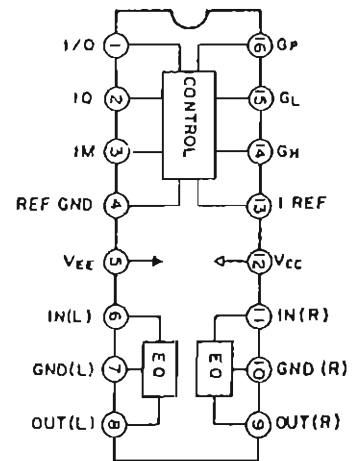
| INPUT | | OUTPUT | | MODE |
|-------|------|--------|-------|--------|
| IN 1 | IN 2 | OUT 1 | OUT 2 | |
| 0 | 0 | ⊖ | ⊖ | STOP |
| 1 | 0 | H | L | CW/CCW |
| 0 | 1 | L | H | CCW/CW |
| 1 | 1 | L | L | BRAKE |

IC BLOCK DIAGRAM

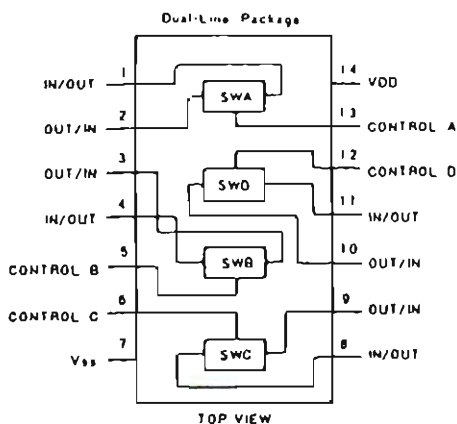
BA6138 (METER DRIVE)



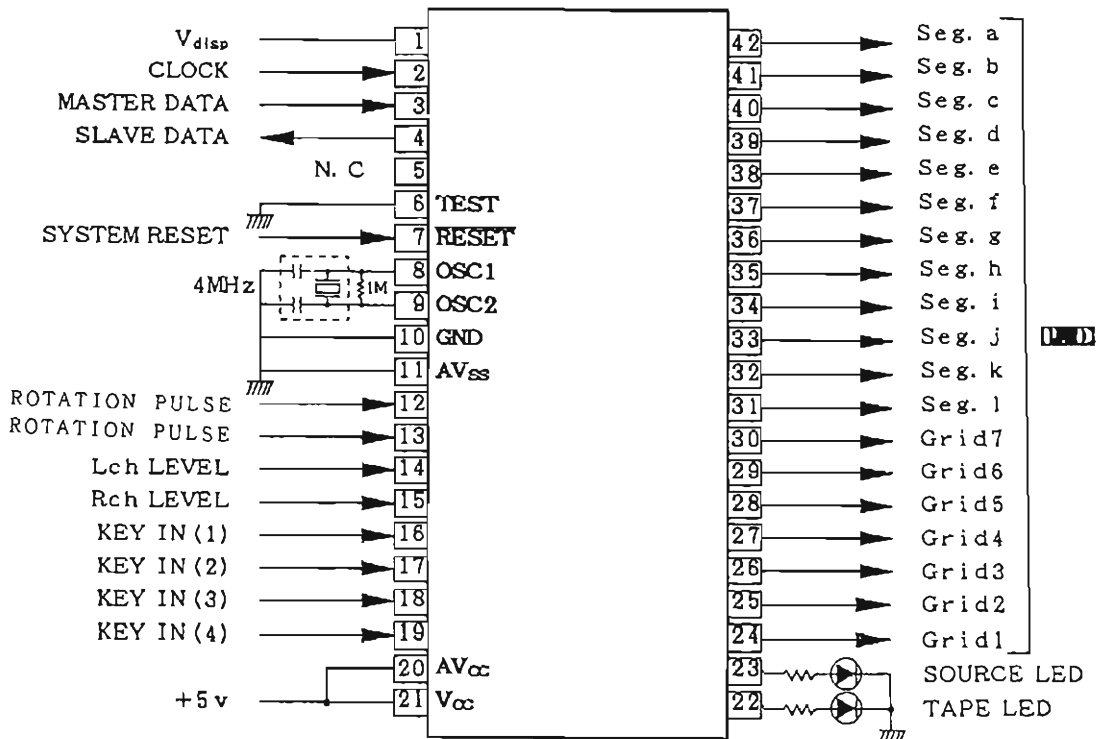
CXA1198AP (REC EQ)



TC4066 (ANALOG SW)

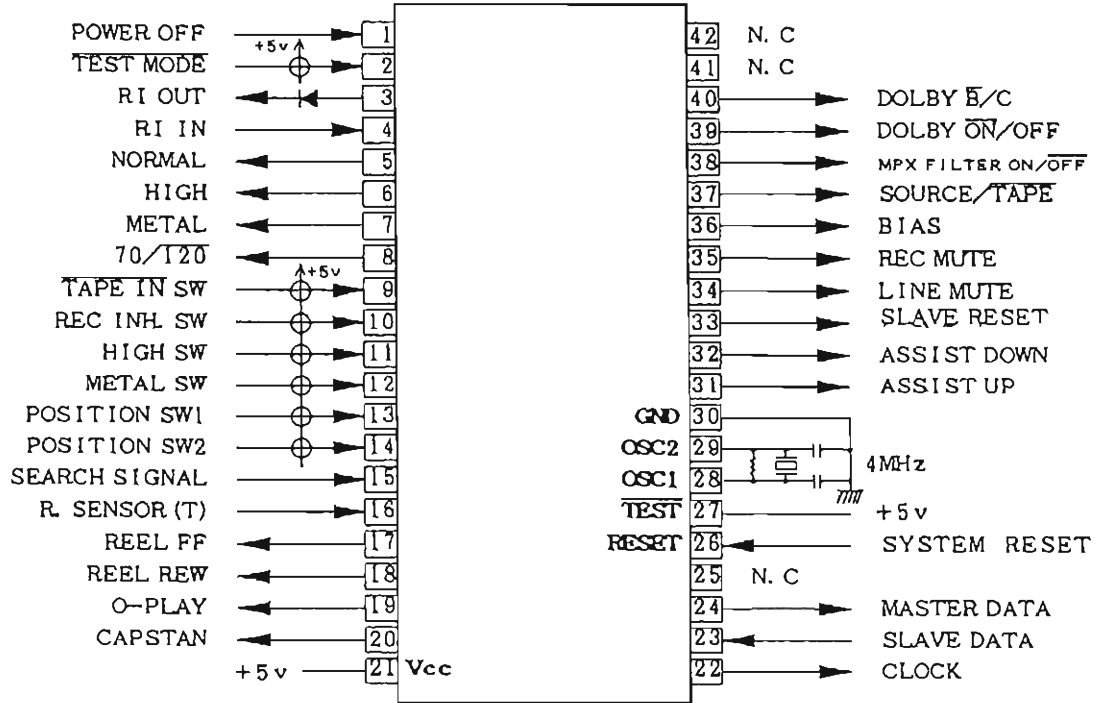


HD404314A18S (COUNTER)



MICROCOMPUTER

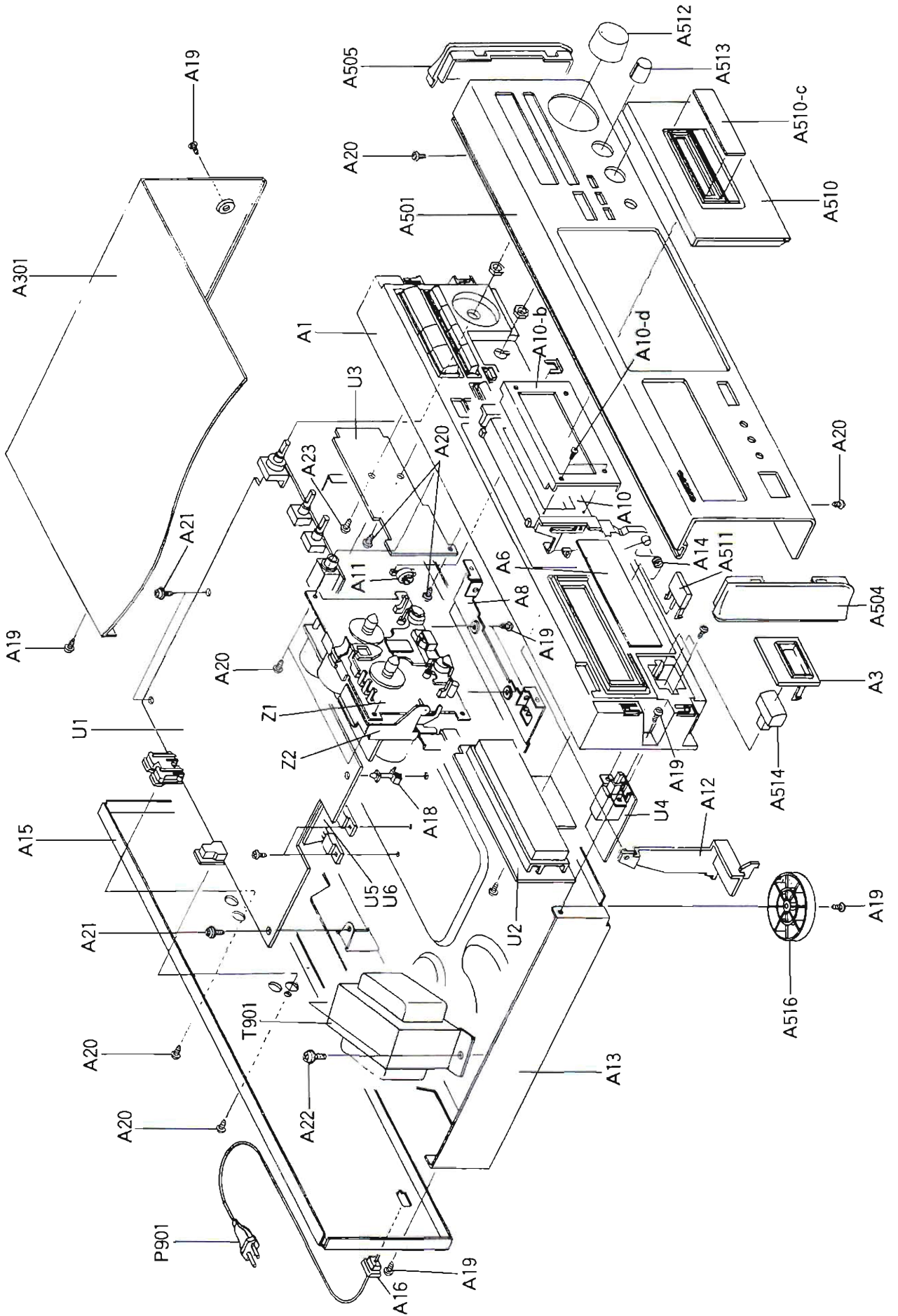
HD40A4240A57S



MICROCOMPUTER TERMINAL DESCRIPTION (HD40A4240A57S)

| Port no. | Name | I/O | Description |
|----------|---------------|-----|-------------------------------------|
| 1 | POWER OFF | IN | Power off detection |
| 2 | TEST MODE | | |
| 3 | RI OUT | OUT | RI cord output |
| 4 | RI IN | IN | RI cord input |
| 5 | NORMAL | OUT | REC/PB equalizer control active:H |
| 6 | HIGH | OUT | |
| 7 | METAL | OUT | |
| 8 | 70/120 | OUT | |
| 9 | TAPE IN SW | IN | Cassette in detection active:L |
| 10 | REC INH-SW | IN | Recording prevention,active:H |
| 11 | HIGH SW | IN | Tape position selection active:H |
| 12 | METAL SW | IN | |
| 13 | POSITION SW1 | IN | Head position detection switch |
| 14 | POSITION SW2 | IN | |
| 15 | SEARCH SIGNAL | IN | Search signal input |
| 16 | R.SENSOR(T) | IN | Reel rotation pulse input |
| 17 | REEL FF | OUT | Reel motor control,active:H |
| 18 | REEL REW | OUT | |
| 19 | 0-PLAY | OUT | Reel motor torque control |
| 20 | CAPSTAN | OUT | Capstan motor control |
| 21 | Vcc | IN | +5V |
| 22 | CLOCK | OUT | Clock to counter micon |
| 23 | SLAVE DATA | IN | Data input from counter micon |
| 24 | MASTER DATA | OUT | Data output to counter micon |
| 25 | NC | | |
| 26 | SYSTEM RESET | IN | System micon reset |
| 27 | TEST | | |
| 28 | OSC 1 | | System clock 4MHz |
| 29 | OSC 2 | | System clock |
| 30 | GND | | |
| 31 | ASSIST UP | OUT | Assist motor control,active:H |
| 32 | ASSIST DOWN | OUT | |
| 33 | SLAVE RESET | OUT | Counter micon reset,active:L |
| 34 | LINE MUTE | OUT | Line muting,active:H |
| 35 | REC MUTE | OUT | Recording muting,active:H |
| 36 | BIAS | OUT | Bias control,active:H |
| 37 | SOURCE/TAPE | OUT | Source/tape selection |
| 38 | MPX ON/OFF | OUT | MPX.filter ON/OFF control active:H |
| 39 | DOLBY ON/OFF | OUT | Dolby IC control |
| 40 | DOLBY B/C | OUT | |
| 41 | NC | | |
| 42 | NC | | |

CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW PARTS LIST

| REF.NO. | PARTS NO. | DESCRIPTION | REF.NO. | PARTS NO. | DESCRIPTION |
|---------|------------|-----------------------------|---------|------------|-----------------------------------|
| A1 | 27110788 | FRONT BRACKET | U1 | IN164557-1 | NAAR-4857-1 |
| A2 | 27262443 | PLATE (TI) | U2 | IN164558-1 | NADIS-4858-1 |
| A3 | 27267830 | GUIDE (POW) | U3 | IN164559-1 | NASW-4859-1 |
| A6 | 28191670A | CLEAR PLATE | U4 | IN164560-1 | NASW-4860-1 |
| A8 | 27130704B | BRACKET (F) | U5 | IN164561-1 | NAETC-4861-1 |
| A10 | 27301772 | CASSETTE FRAME AS | U6 | IN164562-1 | NAETC-4862-1 |
| -a | 27301773 | CASSETTEFRAME | W101 | 2009990300 | NSAS-4P0434, SOCKET PB |
| -b | 27130725 | BRACKET (FRM) | W401 | 2009990299 | NSAS-6P0433, SOCKET REC & ERASE |
| -c | 27180435 | SPRING | Z1 | 244183 | CASSETTE DECK MECHAN-ISM, NDM-174 |
| -d | 801437 | TAPPING SCREW | Z2 | 24603398 | EJECT AS |
| A11 | 28400520 | DAMPER | Z3 | 833326047 | TAP-TIGHT SCREW 2.6TTP+4S |
| A12 | 27273157 | JOINT (EJ) | | | |
| A13 | 27100277A | CHASSIS | | | |
| A14 | 27180478 | SPRING (B) | | | |
| A15 | 27121810 | REAR PANEL (P) | | | |
| A16 | 27121812 | REAR PANEL (W) | | | |
| A18 | 27300750 | BUSHING (CORD) | | | |
| A19 | 27190480 | HOLDER | | | |
| A20 | 834430088 | TAP-TIGHT SCREW 3TTS + 8BBC | | | |
| A21 | 833430080 | TAP-TIGHT SCREW 3TTP + 8PBC | | | |
| A22 | 831130088 | TAP-TIGHT SCREW 3TTW+8B | | | |
| A23 | 830440069 | TAP-TIGHT SCREW 4X6 | | | |
| A301 | 838426088 | TAP-TIGHT SCREW 2.6TTB+8B | | | |
| A501 | 28184479 | TOP COVER | | | |
| A502 | IN164121 | FRONT PANEL AS | | | |
| A503 | 28198778 | PACKET | | | |
| A504 | 28141288 | CUSHION | | | |
| A505 | 28125248Y | END CAP (L) | | | |
| A507 | 28125249Y | END CAP (R) | | | |
| A508 | 28135199Y | BADGE | | | |
| -a | 8910301 | STOP RING CS-3 | | | |
| -b | 27301769 | CASSETTE LID AS | | | |
| -c | 27301771 | CASSETTE LID | | | |
| A511 | 28191671 | CASSETTE LID(BS) | | | |
| A512 | 28324912 | CLEAR PLATE | | | |
| A513 | 28324885 | KNOB (EJ) | | | |
| A514 | 28324845 | KNOB (REC) | | | |
| A516 | 28324845 | KNOB (LEV) | | | |
| JL701 | 28324140 | KNOB (POW) | | | |
| P901 | 27175254 | LEG AS | | | |
| T901 | 2047172512 | NCFC7-172512,FFC. | | | |
| S902 | 253193HIT | AC CORD AS-CEE | | | |
| | 2300967A | NPT-1190P (P) | | | |
| | 2300971A | NPT-1190DG (W) | | | |
| | 25065123 | NSS-1258P (W) | | | |

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

ADJUSTMENT PROCEDURES

PRECAUTIONS

- Before adjustment, clean the following parts with an alcohol moistend awab.
 - * record/play back head
 - * pinch roller
 - * erase head
 - * capstan
- Do not use magnetized screwdriver for adjustments.
- Demagnetize record/playback head with a liead demagnetizer.

TEST EQUIPMENT/TOOLS REQUIRED:

- Audio oscillator
- Digital frequency counter
- Oscilloscope
- Attenuator
- AC voltmeter
- Non-magnetic screw driver
- Test tapes
 - TCC-153 : 10KHz, -15dB
 - MTT-111 : 3kHz, -10dB
 - MTT-150 : Dolby level calibration 400Hz, tone 200nWh/m

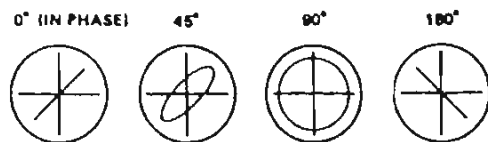
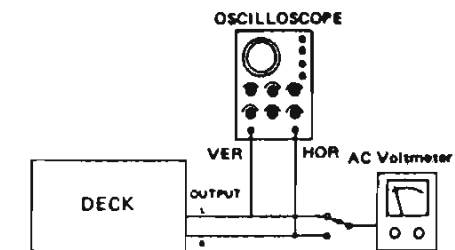
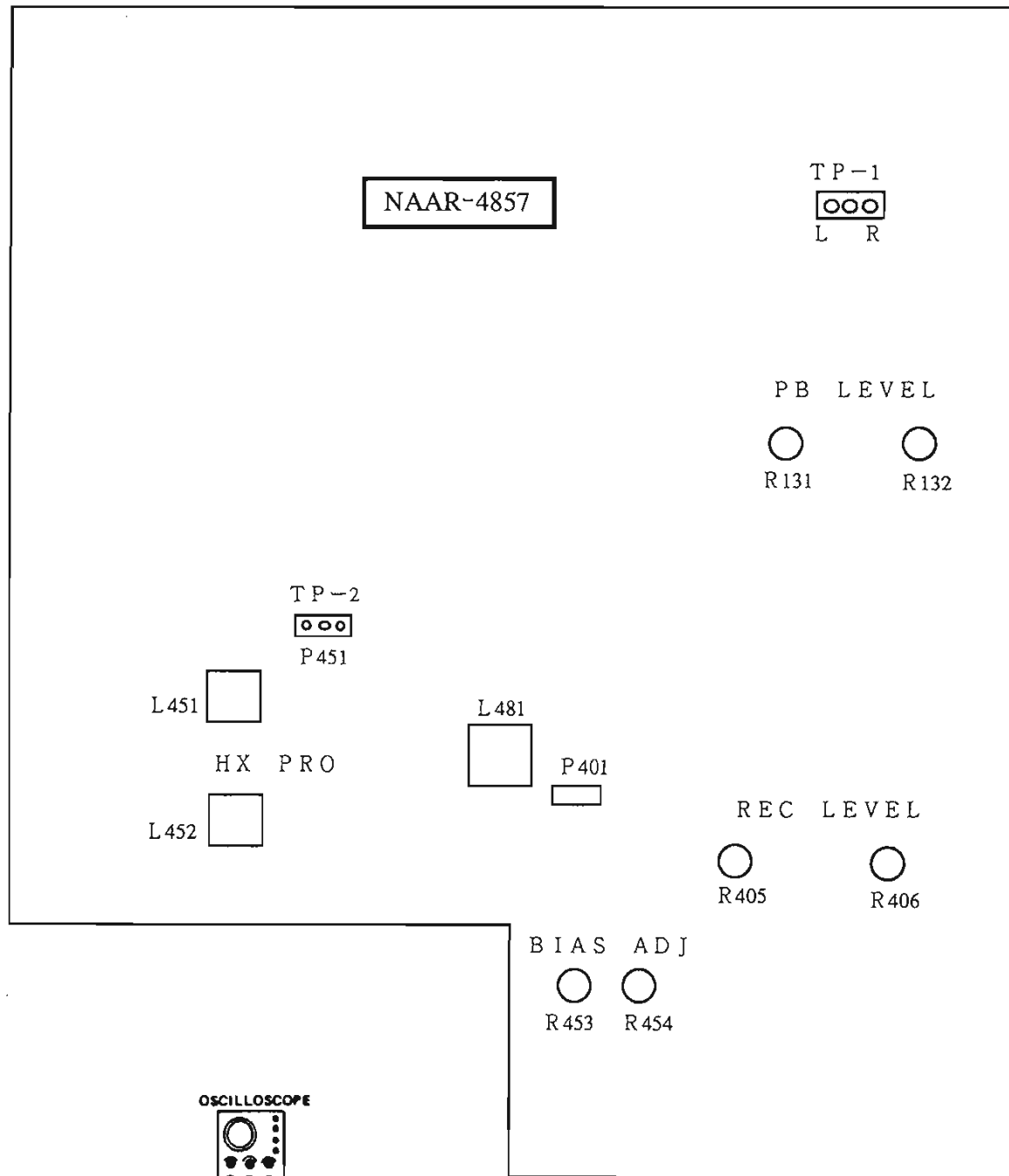
| Item | Connection of instrument | Line input | Test tape | Mode | Output indicator | Adjustment point | Adjust | Remarks |
|------|--------------------------|---|------------------------------|-----------|-------------------|------------------------------|--|------------------------------|
| 1 | Tape speed | Frequency counter to LINE output terminal | MTT-111 | PB | Frequency counter | Semi-fixed on the moter | 3,005Hz±5Hz | |
| 2 | Head azimuth | AC vol tmeter and oscillo-scope to LINE output terminal | TCC-153 | PB | AC vol tmeter | Haed azimuth screw | Maximum and same phase at channels L and R | fig-1 |
| 3 | Playback level | AC vol tmeter to terminals TP-1 (L) (R) | MTT-150 | PB | AC vol tmeter | R-131 (Ch.L) R-132 (Ch.R) | 300mV | |
| 4 | OSC Block | Frequency counter to P401 read loose coupling | METAL TAPE XS-C90 | REC | Frequency counter | L481 | 107KHz±1KHz | |
| 5 | HX-PRO | DC vol tmeter to TP2-TP2 (P451) | METAL TAPE XS-C90 | REC | DC vol tmeter | L-451 (ch.L) L-452 (ch.R) | Minimum | R-453 R-454 Maximum |
| 6 | Bias current | fig-2 | 1KHz, -20dB and 12KHz, -20dB | UD-1 C-90 | REC/PB | AC vol tmeter | R-453 (ch.L) R-454 (ch.R) | Same level at 1KHz and 12KHz |
| 7 | Record level | fig-2 | 1KHz | UD-1 C-90 | REC | AC vol tmeter | Attenuator or AF OSC output | 350mV |
| | | | | | REC/PB | AC vol tmeter | R405 (Ch.L) R406 (Ch.R) | Same level at REC/PB |

Blank tape

- NORMAL...UD-1 C-90
- HIGHXL- II C-90
- METAL.....XS C-60

- PLAY torque30~70g/cm
- FF.REW torque...80~180g/cm
- Back tention 6~12g/cm

ADJUSTMENT POINT



Confirming phase relationship

fig-1

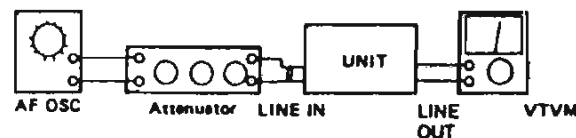
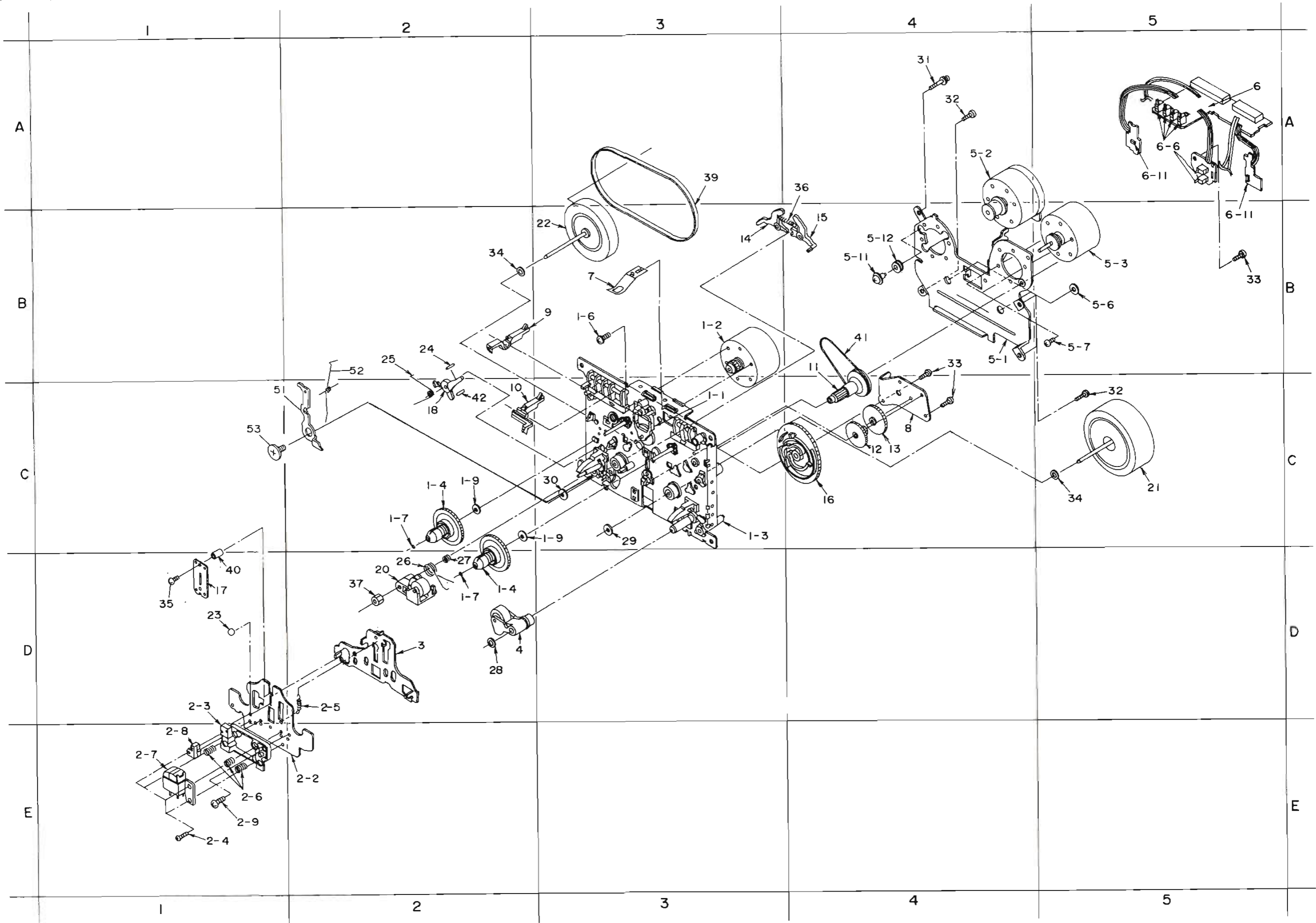


fig-2

TAPE MECHANISM-PART LIST

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|------------|-----------------------------------|
| 1-1 | 24602571 | IDLER AS |
| 1-2 | 24601275 | REEL MOTORAS |
| 1-4 | 24602586 | REEL BASE |
| 1-6 | 24609062 | PAN HEAD SCREW 2.6×10 |
| 1-7 | 24611177 | PLASTIC WASHER 1.7×3.2×2×.25 |
| 1-9 | 24611175 | PLASTIC WASHER 2.1×7×.25 |
| 2 | 24611571 | PLAY HEAD BLOCK |
| 2-2 | 24611572 | HEAD BASE D |
| 2-3 | 24611573 | HEAD SPACER |
| 2-4 | 24609063 | PAN HEAD SCREW 2.0×8 |
| 2-5 | 24605784 | SPRING (HEAD BASE) |
| 2-6 | 24605785 | SPRING |
| 2-7 | 24600119 | REC/PB HEAD |
| 2-8 | 24600120 | ERASE HEAD |
| 2-9 | 833126059 | TAPPING SCREW CT 2.6×5 |
| 3 | 24611574 | P BASE BLOCK |
| 4 | 24602541 | PINCH ROLLER AS |
| 5-2 | 24601274 | MAIN MOTOR |
| 5-3 | 24601276 | MOTOR MMN-6F4RB82 |
| 5-6 | 24609070 | WHEEL CATCH SCREW |
| 5-7 | 24609065 | PAN HEAD SCREW SW2.6×3 |
| 5-11 | 24609056 | SCREW (MOTOR) |
| 5-12 | 24611523 | CUSHION (MOTOR) |
| 6 | 24606521 | PC BOARD C BLOCK |
| 6-6 | 24606271 | PUSH SWITCH |
| 6-11 | 24606522 | SPI-335-34 |
| 7 | 24605739 | SPRING |
| 8 | 24607131 | BRACKET (P.C.B.) H |
| 9 | 24603365A | LEVER (REC) |
| 10 | 24603367 | LEVER (METAL) L |
| 11 | 24602574 | GEAR (A) |
| 12 | 24602575 | GEAR (B) |
| 13 | 24602576 | GEAR (C) |
| 14 | 24603393 | BRAKE (L) |
| 15 | 24603394 | SLIDE LEVER |
| 16 | 24602577 | CAM GEAR (H) |
| 17 | 24605787 | SPRING |
| 18 | 24611575 | BT ARM |
| 20 | 24602581 | PINCH ROLLER AS (L) |
| 21 | 24602582 | FLY WHEEL AHK (R) |
| 22 | 24602583 | FLY WHEEL TS (L) |
| 23 | 24611039 | STEEL BALL |
| 24 | 24611576 | FELT H |
| 25 | 24605793 | BACK TENTION SPRING |
| 26 | 24605794 | PINCH ROLLER SPRING |
| 27 | 24605795 | HIGHT ADJUST SPRING |
| 28 | 24611554 | WASHER 3.5×0.25 |
| 29 | 24611555 | OIL SEAL 2.4×0.25 |
| 30 | 24611188A | WASHER (OIL SEAL) |
| 31 | 24609042 | S-TIGHT SCREW M2.6×25 |
| 32 | 838126080 | SCREW 2.6×8 |
| 33 | 838126060 | SCREW 2.6×6 |
| 34 | 24611041 | PLASTIC WASHER 2.6×0.25 |
| 35 | 833120079 | PAN HEDSCREW TT2.6×7ZN |
| 36 | 24605788 | SPRING (BRAKE) |
| 37 | 24611581 | NYLON NUT |
| 39 | 24602584 | MAIN BELT |
| 40 | 24611580 | SPACER |
| 41 | 24602579 | BELT |
| 42 | 24604101 | BT ARM SH |
| 51 | 24607041B | ARM(PROTECT)L |
| 52 | 24605786 | SPRING |
| 53 | 24609006A | SCREW |
| | 2009990300 | NSAS-4P0434,PB HEAD WIRE |
| | 2009990299 | NSAS-6P0433,REC & ERASE HEAD WIRE |

TAPE MECHANISM-EXPLODED VIEW

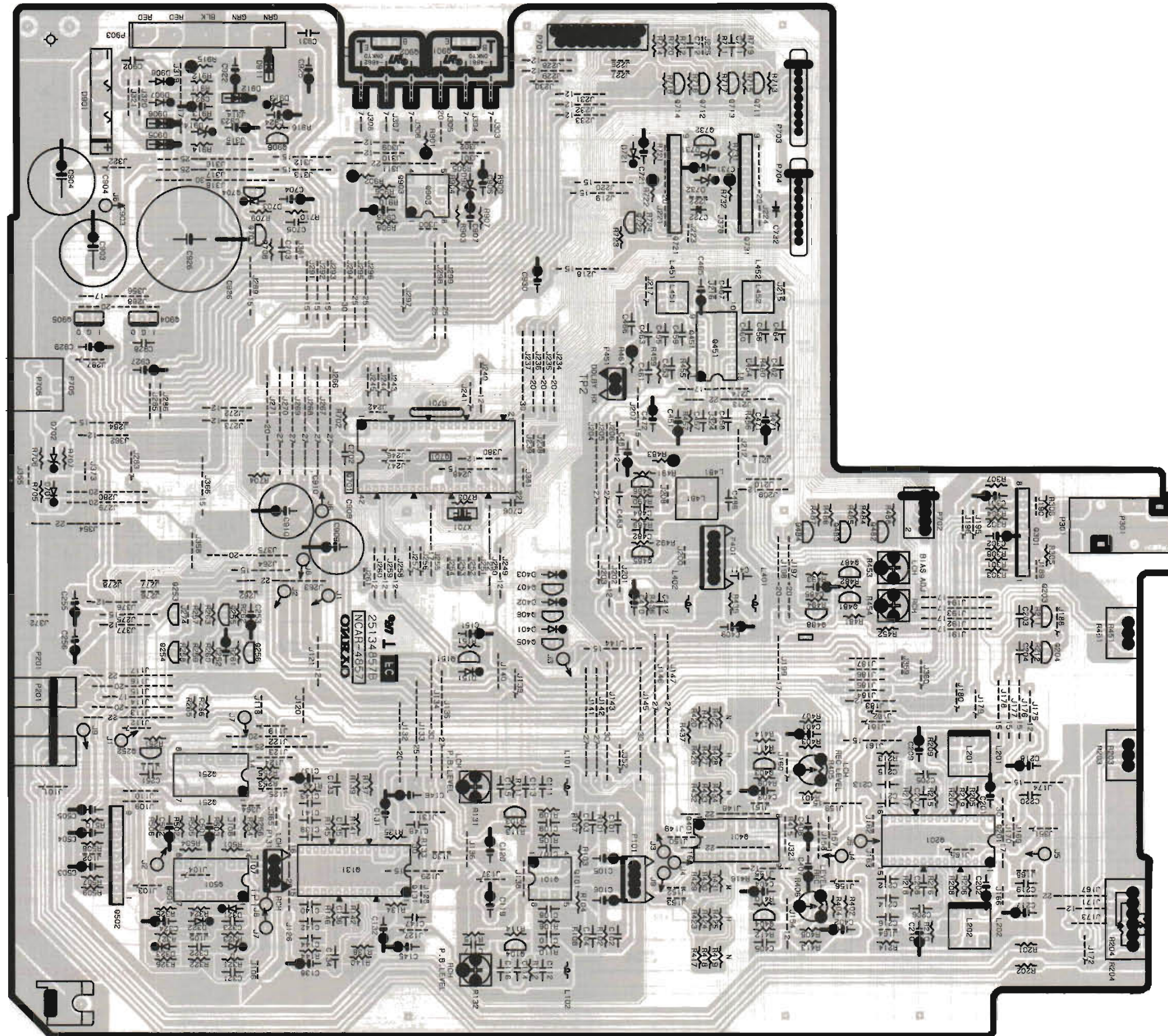


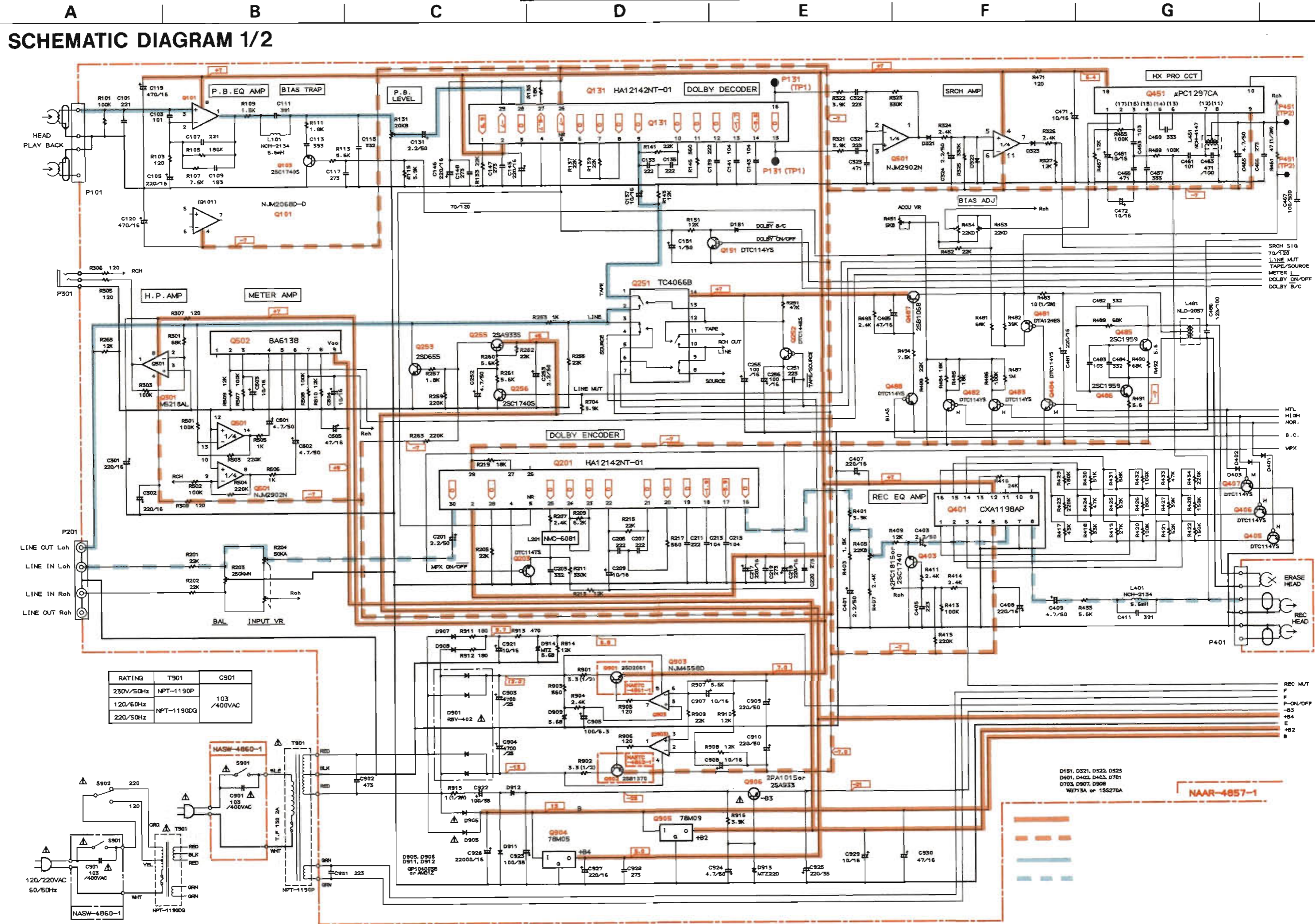
PRINTED CIRCUIT BOARD – PARTS LIST

| CIRCUIT NO. | PARTS NO. | DESCRIPTION | CIRCUIT NO. | PARTS NO. | DESCRIPTION | CIRCUIT NO. | PARTS NO. | DESCRIPTION | CIRCUIT NO. | PARTS NO. | DESCRIPTION |
|--------------------|--------------|----------------|-------------------|-------------|------------------------|--------------------|-------------|----------------------------------|-------------------|------------|-------------------------|
| Q101 | 222956 | NJM-2068D-D | D721 | 224450913 | MTZ9.1C | C923 | 391961017 | 100 μ F35V,ELECT. | NADIS-4858 | | |
| Q131 | 22240631 | HA12142NT-01 | D731 | 224450433 | MTZ4.3C | C924 | 391980477 | 4.7 μ F50V,ELECT. | CIRCUIT NO. | PARTS NO. | DESCRIPTION |
| Q201 | 22240631 | HA12142NT-01 | D732 | 224450752 | MTZ7.5B | C925 | 391962217 | 220 μ F35V,ELECT. | Q751 | 22240737 | HD404314A18S |
| Q251 | 222840661TOS | 4066B | D901 | 22380022F | RBV402 | C926 | 3500181 | 2200 μ F16V,ELECT. | Q752 | 212126 | BJ199GK |
| Q301 | 22240368 | M5218AL | D905 | 22380035 or | GP104003E or | C927 | 393142217 | 220 μ F16V,ELECT. | Q753 | 2213284 or | 2SC1740S-R or |
| Q401 | 22240267 | CXA1198AP | D906 | 22380046 | AM01Z | C929 | 391941007 | 10 μ F16V,ELECT. | 2213285 | 2SC1740S-S | |
| Q451 | 222959 | μ PC1297CA | D907 | 22380046 | AM01Z | C930 | 391944707 | 47 μ F16V,ELECT. | Q754 | 2213284 or | 2SC1740S-R or |
| Q501 | 22240040 | NJM-2902N | D908 | 223222 or | WG713A or | Resistors | | | 2213285 | 2SC1740S-S | |
| Q502 | 22240313 | BA6138 | D909 | 223205 | 1SS270A | R131,R132 | 5210263 | N06HR20KBC | D751 | 224450562 | MTZ5.6B |
| Q701 | 22240746 | HD40A4240A57S | D911 | 223222 or | WG713A or | R203 | 5104307 | N09RLC250K | X751 | 3010150 | CST4.00MGW |
| Q721 | 22240239 | TA-7291S | D912 | 223205 | 1SS270A | R204 | 5104330 | NI6RGL50KA | C751 | 391941007 | 10 μ F16V,ELECT. |
| Q731 | 22240239 | TA-7291S | D913 | 224450562 | MTZ5.6B | R405,R406 | 5210066 | N06HR22KBD | S751-S753 | 25035652 | NPS-111-S604 |
| Q903 | 222465 | NJM-4558D | D914 | 224450562 | MTZ5.6B | R451 | 5104309 | N09RLC5KB | P701A | 25050881 | NSCT-17P676 |
| Q904 | 222780055MAT | 78M05 | | | | R453,R454 | 5210263 | N06HR20KBC | 27190838A | 27190838A | HOLDER(FL) |
| Q905 | 222780095MAT | 78M09 | | | | R461 | 443524704 | RS1/2WBJ47 Ω | NASW-4859 | | |
| Transistors | | | Coils | | | R483 | 443521004 | RS1/2WBJ10 Ω | CIRCUIT NO. | PARTS NO. | DESCRIPTION |
| Q103,Q104 | 2213284 or | 2SC1740S-R or | L101,L102 | 231086 | NCH-2134 | R701 | 49163392406 | RM1/10IJ3.9K Ω \times 6 | D761 | 225291D | SEL4910D-D |
| Q151 | 221281 | DTC114YS | L201,L202 | 233436 | NMC-6081 | R722 | 453530224 | RNU1/2WCJ2.2 Ω | D762 | 225290 | SEL4110R |
| Q203,Q204 | 221299 | DTC114TS | L401,L402 | 231086 | NCH-2134 | R732 | 443521004 | RS1/2WBJ10 Ω | S761-S771 | 25035652 | NPS-111-S604 |
| Q252 | 221282 | DTC144ES | L451,L452 | 231100 | NCH-4147 | R901,R902 | 453530334 | RNU1/2WCJ3.3 Ω | NASW-4860 | | |
| Q253,Q254 | 2211705 or | 2SD655-E or | L481 | 231212 | NLO-2057 | R915 | 453530104 | RNU1/2WCJ1 Ω | CIRCUIT NO. | PARTS NO. | DESCRIPTION |
| Q255 | 2211706 | 2SD655-F | X701 | 3010150 | CST4.00MGW | Plug,socket | | | C901 | 3500065A | 0.01 μ F AC400V,IS. |
| Q256 | 2214905, | 2PA1015GR, | Capacitors | | | P101 | 25055148 | NPLG-4P132 | S901 | 25035636 | NPS-111-L509P |
| Q403,Q404 | 2214906, | 2PA1015BL, | C105,C106 | 393142217 | 220 μ F16V,ELECT. | P131 | 25055133 | NPLG-3P117 | P901 | 25055675 | NPLG-2P631 |
| Q405-Q407 | 2213354 or | 2SA933S-R or | C119,C120 | 391944717 | 470 μ F16V,ELECT. | P201 | 25045338 | NPJ-4PDBL189 | NAETC-4861 | | |
| Q481 | 2213355 | 2SA933S-S | C131,C132 | 391980227 | 2.2 μ F50V,ELECT. | P301 | 25045337 | HLJ-7000-01-3010 | CIRCUIT NO. | PARTS NO. | DESCRIPTION |
| Q482-Q484 | 2213284 or | 2SC1740S-R or | C137,C138 | 391941007 | 10 μ F16V,ELECT. | P401 | 25055150 | NPLG-6P134 | Q901 | 2202115 or | 2SD2061-E or |
| Q485-Q486 | 2213285 | 2SC1740S-S | C145,C146 | 393142217 | 220 μ F16V,ELECT. | P451 | 25055132 | NPLG-2P116 | 2202116 | 2SD2061-F | |
| Q487 | 2213285 | 2SC1740S-S | C151 | 391980107 | 1 μ F50V,ELECT. | P701 | 25050849 | NSCT-17P644 | NAETC-4862 | | |
| Q488 | 221281 | DTC114YS | C201,C202 | 391980227 | 2.2 μ F50V,ELECT. | P702 | 25050527 | NSCT-5P350 | CIRCUIT NO. | PARTS NO. | DESCRIPTION |
| Q703,Q704 | 2212600 | DTA124ES | C217,C218 | 393142217 | 220 μ F16V,ELECT. | P705 | 25045330 | NPJ-2PDBL184 | Q902 | 2202175 or | 2SB1370-E or |
| Q711,Q712 | 2213284 or | 2SC1740S-R or | C252 | 391980477 | 4.7 μ F50V,ELECT. | | | | 2202176 | 2SB1370-F | |
| Q713,Q714 | 2213285 | 2SC1740S-S | C253 | 391980227 | 2.2 μ F50V,ELECT. | | | | | | |
| Q722 | 2211705 or | 2SD655-E or | C255,C256 | 391941017 | 100 μ F16V,ELECT. | | | | | | |
| Q732 | 2211706 | 2SD655-F | C301,C302 | 393142217 | 220 μ F16V,ELECT. | | | | | | |
| Q906 | 221281 | DTC114YS | C324 | 391980227 | 2.2 μ F50V,ELECT. | | | | | | |
| | | | C401-C404 | 391980227 | 2.2 μ F50V,ELECT. | | | | | | |
| | | | C407,C408 | 393142217 | 220 μ F16V,ELECT. | | | | | | |
| | | | C409,C410 | 391980477 | 4.7 μ F50V,ELECT. | | | | | | |
| | | | C451 | 391941007 | 10 μ F16V,ELECT. | | | | | | |
| | | | C461,C462 | 370131014 | 100PF100V,APS | | | | | | |
| | | | C463,C464 | 370134714 | 470PF100V,APS | | | | | | |
| | | | C465 | 391980477 | 4.7 μ F50V,ELECT. | | | | | | |
| | | | C471,C472 | 391941007 | 10 μ F16V,ELECT. | | | | | | |
| | | | C481 | 393142217 | 220 μ F16V,ELECT. | | | | | | |
| | | | C486 | 370131234 | 0.012 μ F100V,APS | | | | | | |
| | | | C501,C502 | 391980477 | 4.7 μ F50V,ELECT. | | | | | | |
| | | | C503,C504 | 391941007 | 10 μ F16V,ELECT. | | | | | | |
| | | | C505 | 391944707 | 47 μ F16V,ELECT. | | | | | | |
| | | | C704 | 391980227 | 2.2 μ F50V,ELECT. | | | | | | |
| | | | C721,C731 | 391941017 | 100 μ F16V,ELECT. | | | | | | |
| | | | C722,C732 | 352980226 | 2.2 μ F50V,NP. | | | | | | |
| | | | C903,C904 | 391954727S | 4700 μ F25V,ELECT. | | | | | | |
| | | | C905 | 391921017 | 100 μ F6.3V,ELECT. | | | | | | |
| | | | C907,C908 | 391941007 | 100 μ F6.3V,ELECT. | | | | | | |
| | | | C909,C910 | 393082217S | 10 μ F16V,ELECT. | | | | | | |
| | | | C921 | 391941007 | 220 μ F50V,ELECT. | | | | | | |
| | | | C922 | 391961017 | 10 μ F16V,ELECT. | | | | | | |
| | | | | | 100 μ F35V,ELECT. | | | | | | |

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

NAAR-4857-1



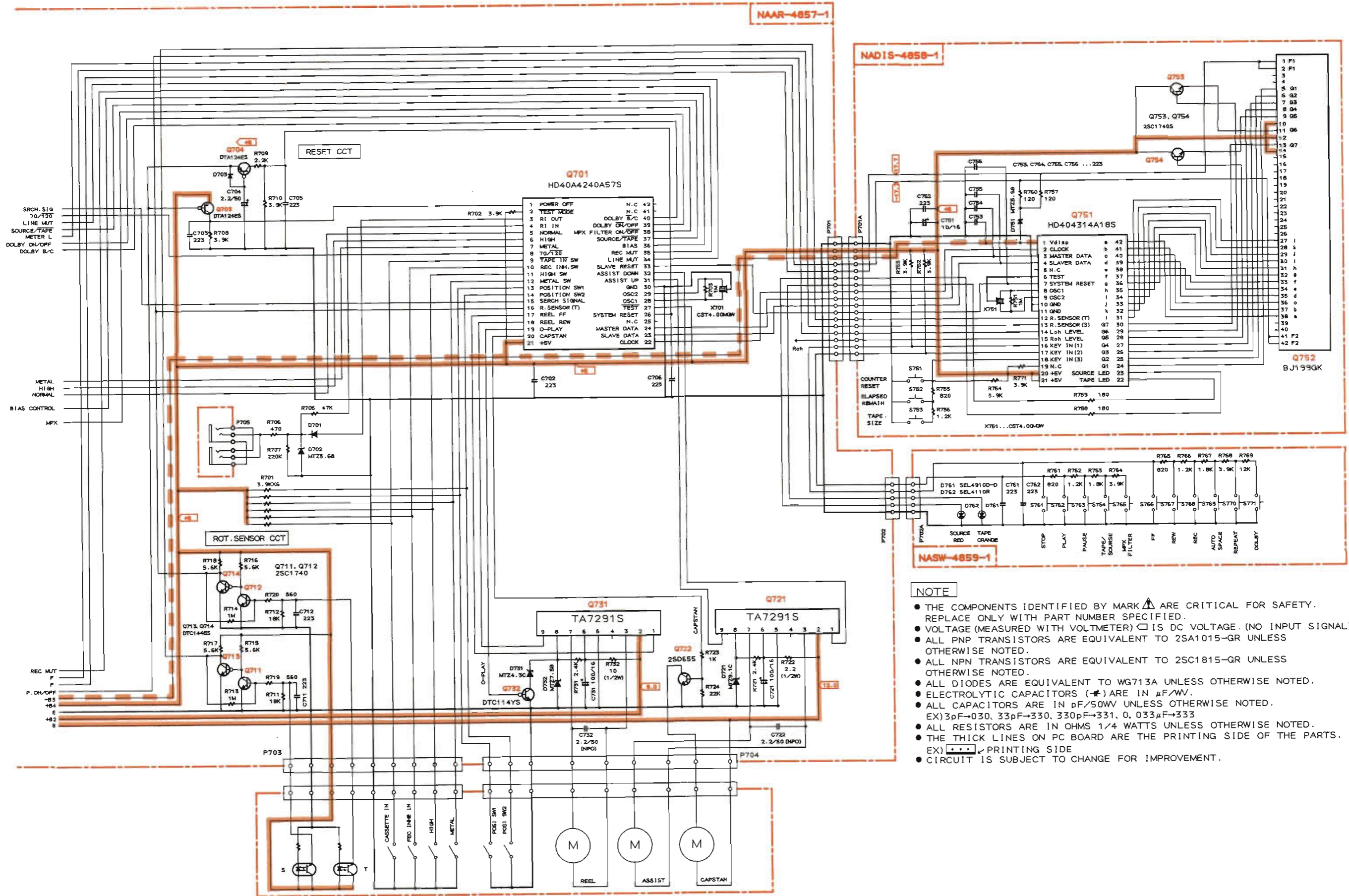


| RATING | T901 | C901 |
|-----------|------------|-------------|
| 230V/50Hz | NPT-1190P | 103 /400VAC |
| 120V/60Hz | NPT-1190D3 | |
| 220V/50Hz | | |

D151, D321, D322, D323
 D401, D402, D403, D701
 D703, D907, D908
 W8713A or 1SS270A

NAAR-4857-1

SCHEMATIC DIAGRAM 2/2

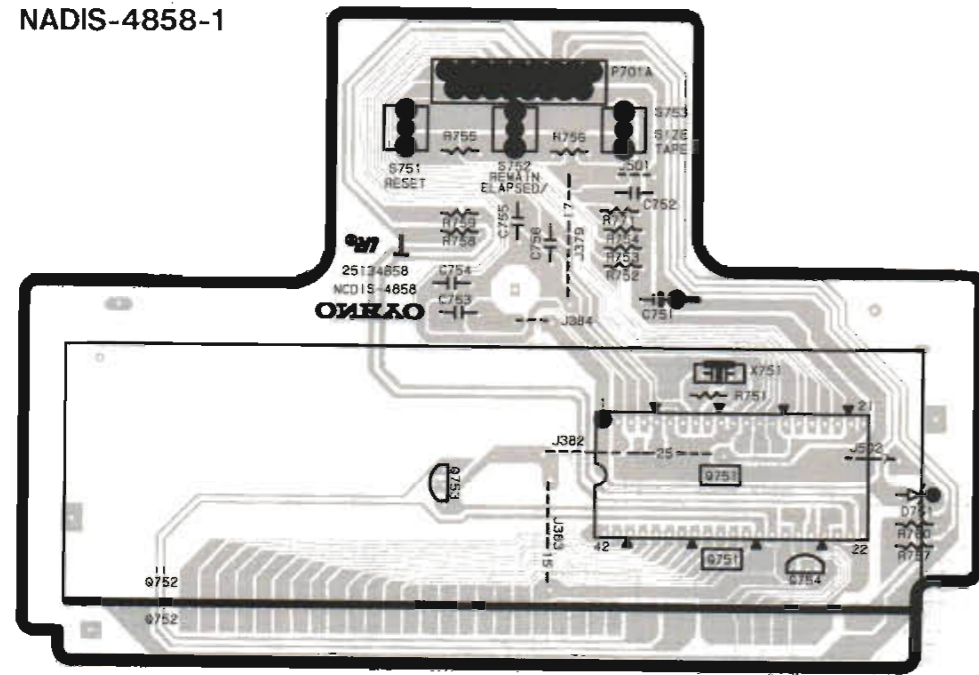


NOTE

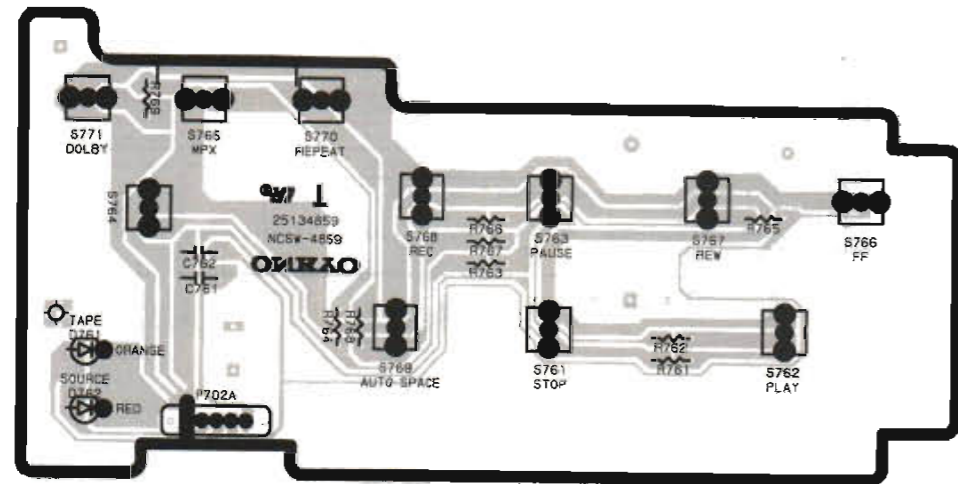
- THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) \square IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO WG713A UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (E) ARE IN $\mu F/WV$.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX) 3pF→030, 33pF→330, 330pF→331, 0.033 μF →333
- 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) \square PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

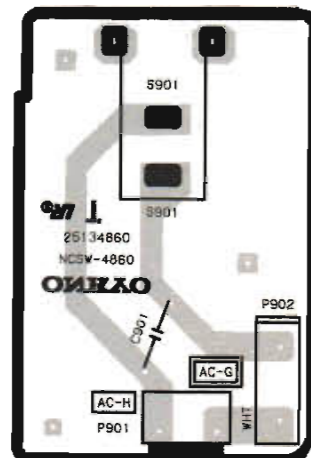
NADIS-4858-1



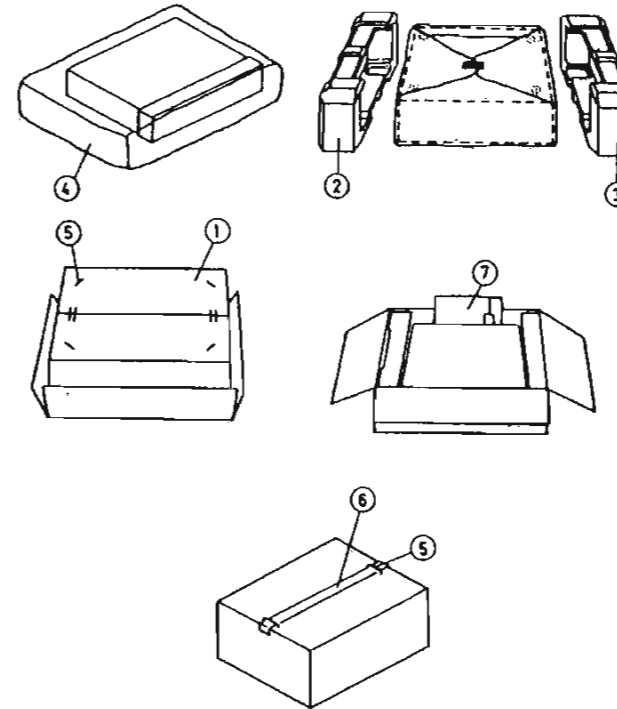
NASW-4859-1



NASW-4860-1



PACKING VIEW



PARTS LIST

| REF.NO. | PART NO. | DESCRIPTION |
|---------|----------------------------|-----------------------------|
| 1 | 29052879 | Carton box |
| 2 | 29091636 | Pad (L) |
| 3 | 29091637 | Pad (R) |
| 4 | 29100105 | 680×550 Poly bag |
| 5 | 282301 | Sealing hook |
| 6 | 29110071 | Damplon tape |
| 7 | Accessory bag ass'y | |
| | 29341895 | Instruction manual [P] |
| | 29341894 | Instruction manual [W] |
| | 29100097 | 320×250 Poly bag |
| | 25055040 | CV-K-2, Conversion plug [W] |

NOTE
 [P]: Only 230V model
 [W]: Only worldwide model

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