Ref. No. 3464

ONKYO SERVICE MANUAL

CASSETTE TAPE DECK
MODEL TA-250

UP, UPⓋ	230VAC, 50Hz
UW	120/220VAC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE 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.

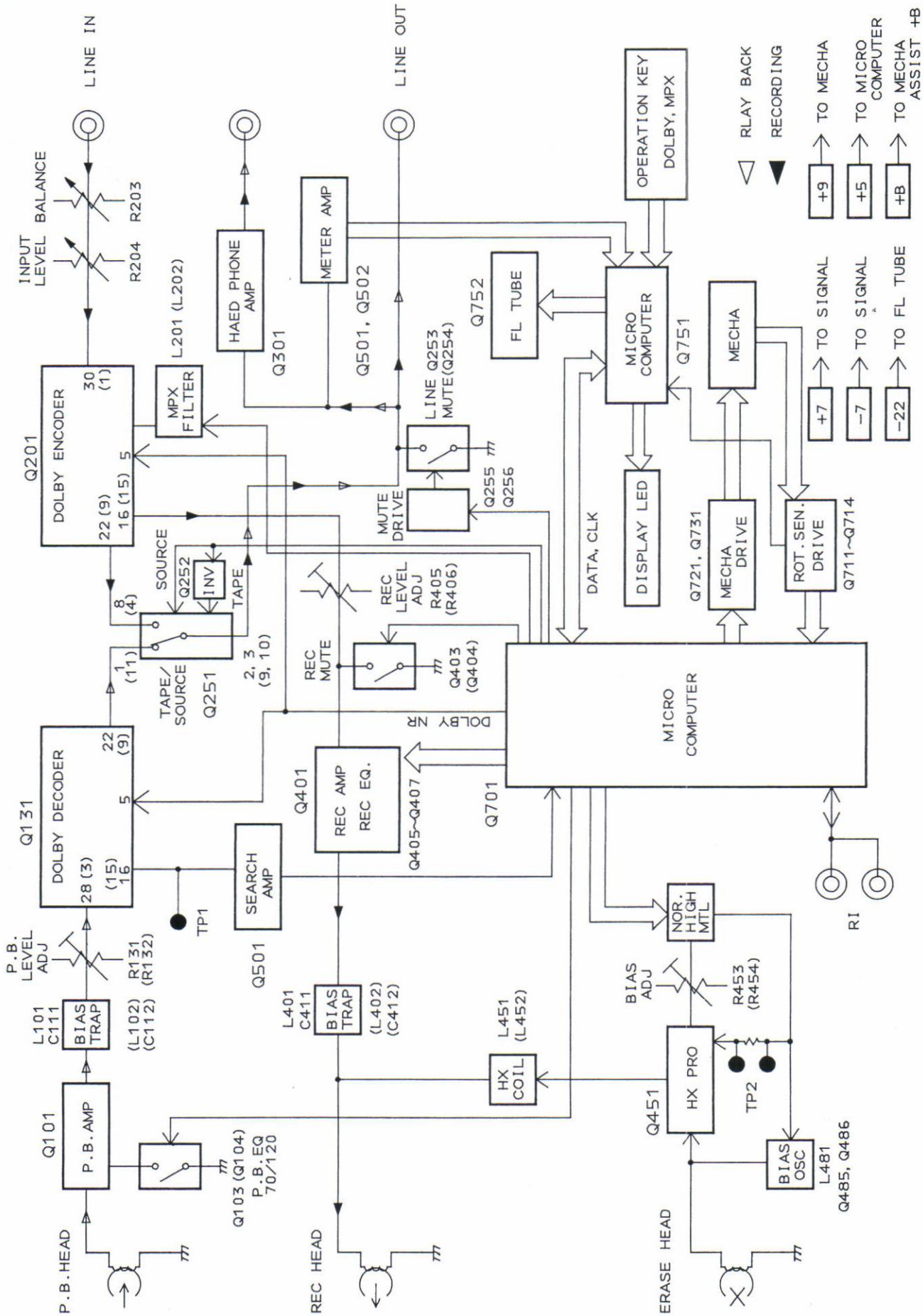
ONKYO®
AUDIO COMPONENTS

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 ±3dB) 20—19,000Hz (high) (30—18,000Hz ±3dB) 20—20,000Hz (metal) (30—19,000Hz ±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 impèdance: 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 (Execpt 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 15/16" x 4 3/4" x 12 3/16"
Weight:	5.0 kg. (11.0 lbs.)

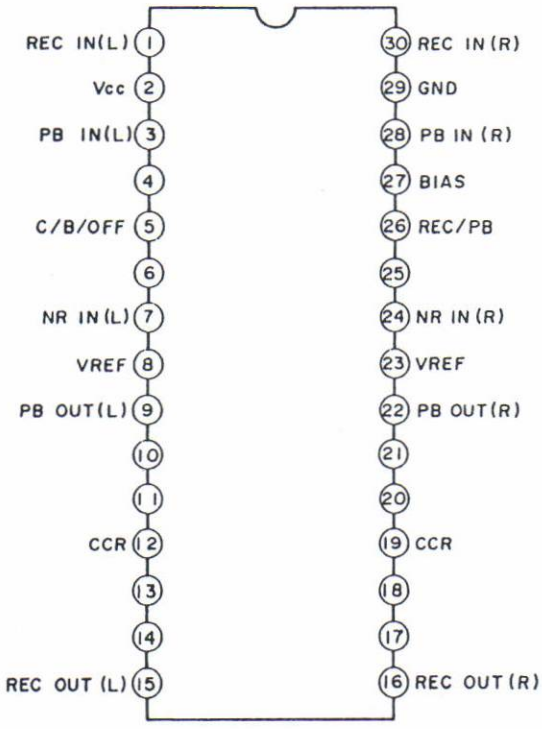
Specifications and external appearance are subject to change without notice because of product improvements.

BLOCK DIAGRAM



IC BLOCK DIAGRAM

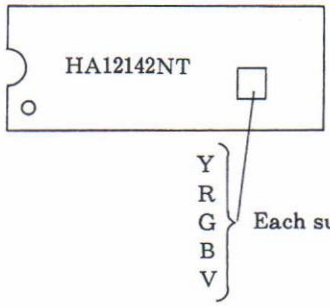
HA12142NT (DOLBY NR)



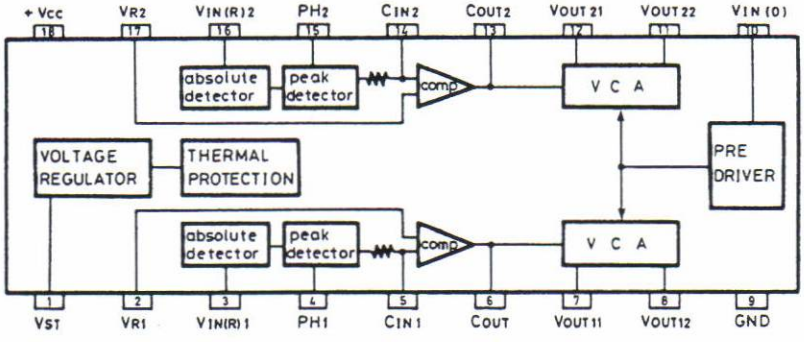
Precaution in case of replacing DOLBY IC

DOLBY IC(HA12142NT-01) can be devided into five stadards.
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.

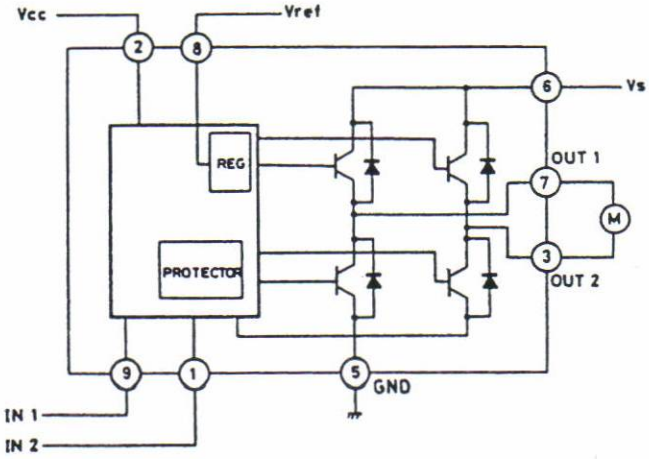
The displays of standard are as follows.



μPC1297CA (HX PRO)



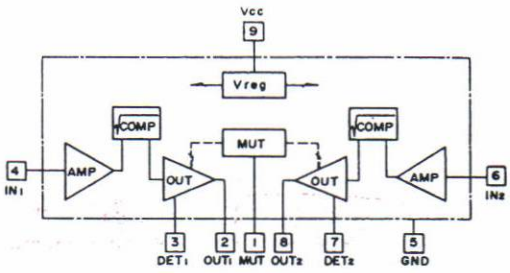
TA7291S (MOTOR DRIVE)



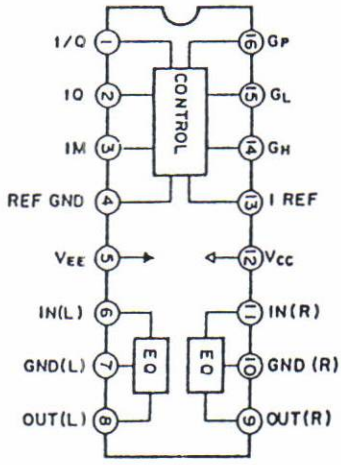
INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

IC BLOCK DIAGRAM

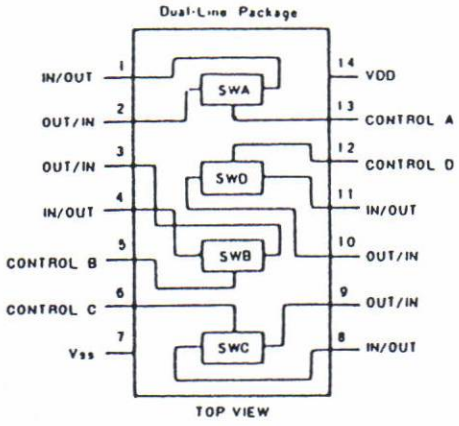
BA6138 (METER DRIVE)



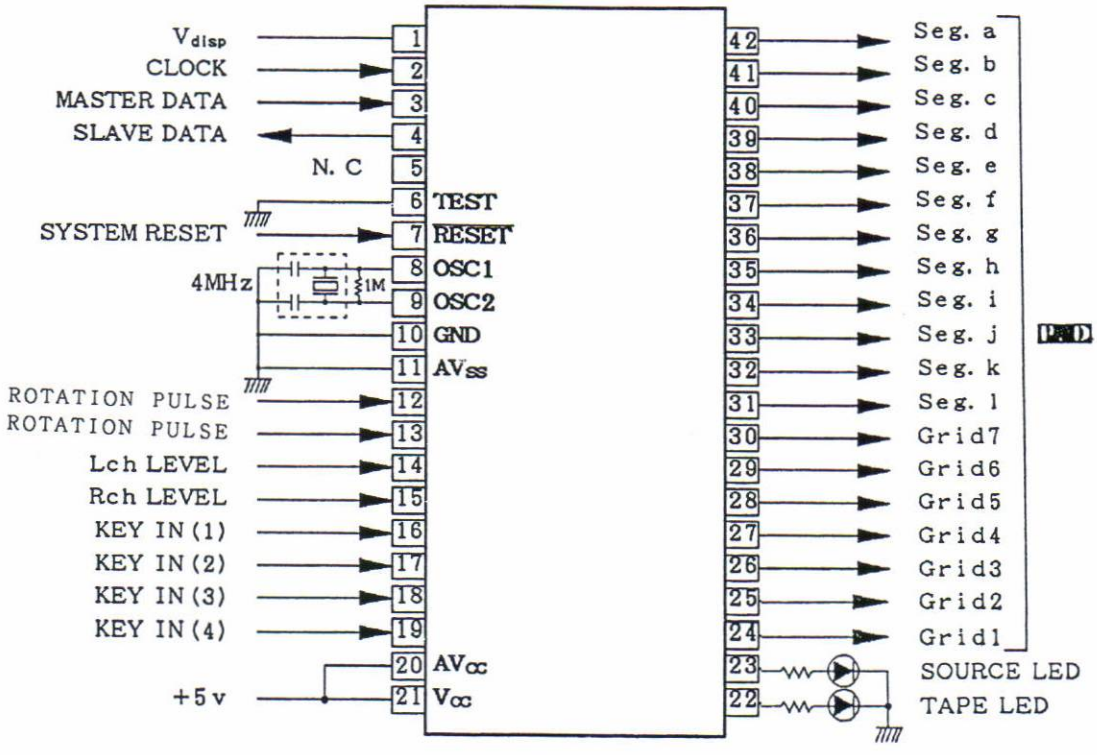
CXA1198AP (REC EQ)



TC4066 (ANALOG SW)



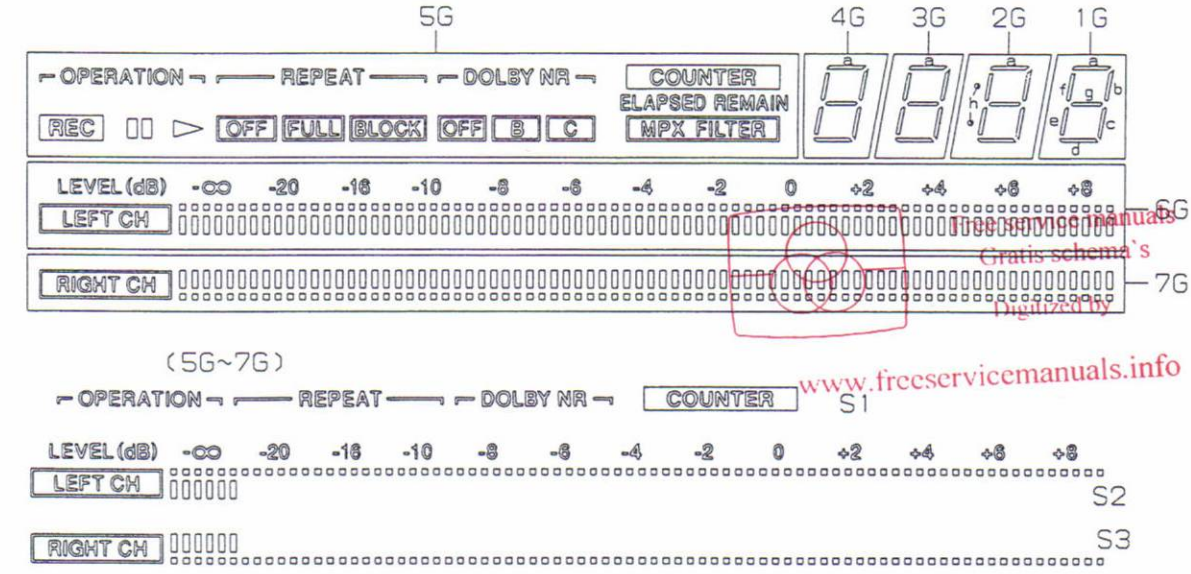
HD404314A18S (COUNTER)



FLUORESCENT TUBU

BJ199GK

GRID ASSIGNMENT



PIN CONNECTION

PIN NO.	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	NP	NP	1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	P15	1G	P14	2G	P13	3G	4G	5G	F1	F1

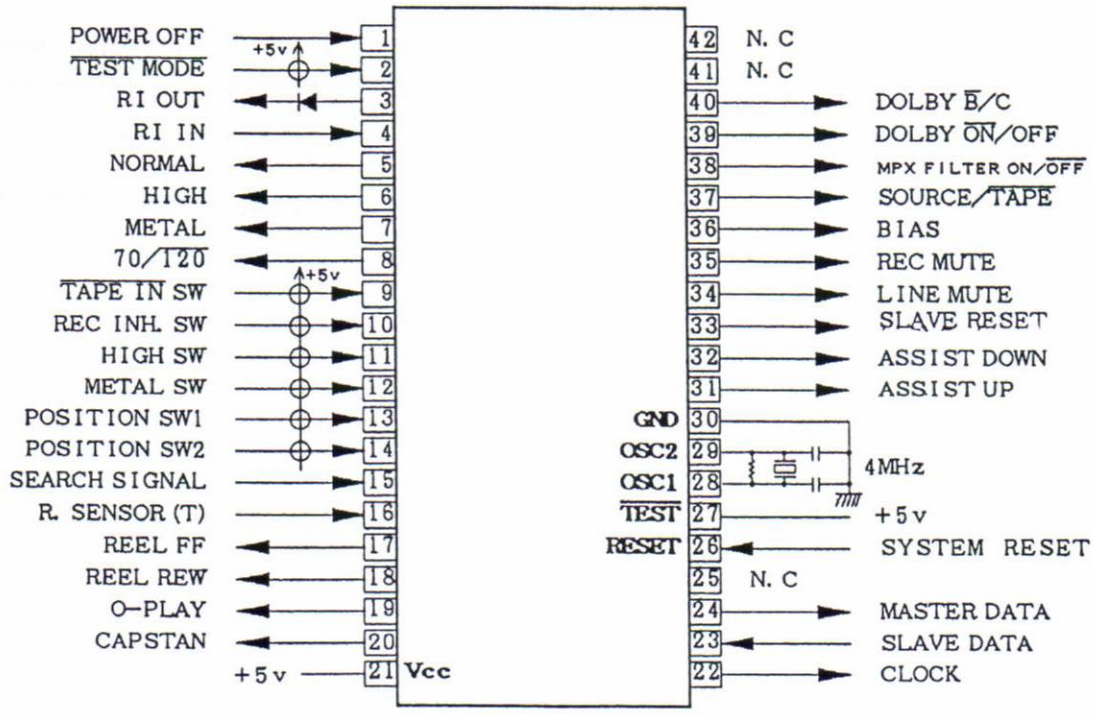
NOTE
1) F1,F2 --- Filament
2) NP ------ No pin
3) NC ------ No connection
4) DL ------ Datum Line
5) 1G~7G --- Grid

ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	B1	B1	REC	a	a	a	a
P2	B2	B2	▯▯	b	b	b	b
P3	B3	B3	▷	c	c	c	c
P4	B4	B4	OFF	d	d	d	d
P5	B5	B5	FULL	e	e	e	e
P6	B6	B6	BLOCK	f	f	f	f
P7	B7	B7	OFF	g	g	g	g
P8	B8	B8	B	–	–	h	–
P9	B9	B9	C	–	–	–	–
P10	B10	B10	ELAPSED	–	–	–	–
P11	B11	B11	REMAIN	–	–	–	–
P12	B12	B12	MPX FILTER	–	–	–	–
P13	–	–	S1	–	–	–	–
P14	–	S2	–	–	–	–	–
P15	S3	–	–	–	–	–	–

MICROCOMPUTER

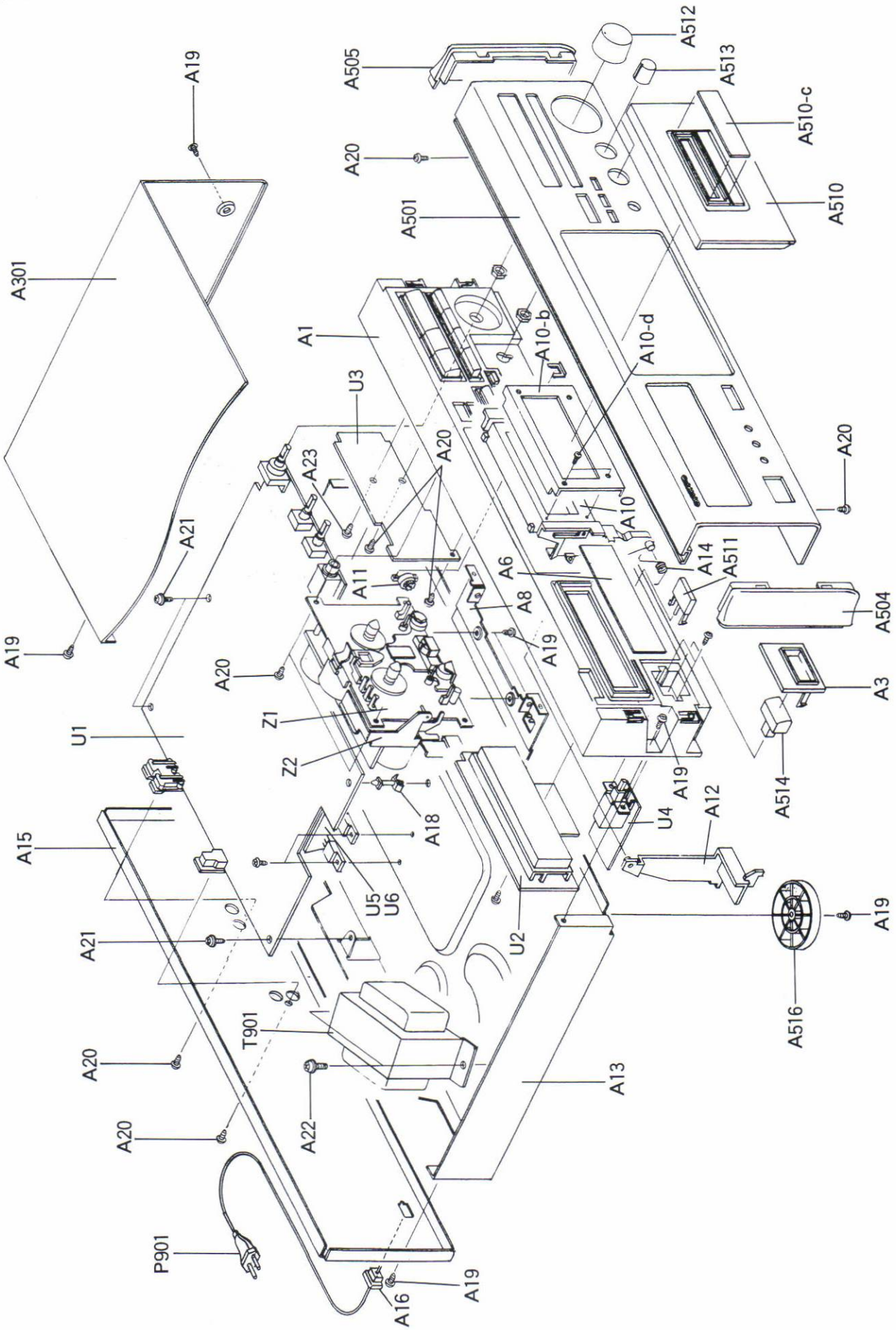
HD40A4240A57S



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
12	METAL SW	IN	active:H
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	O-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/$\overline{\text{TAPE}}$	OUT	Source/tape selection
38	MPX ON/OFF	OUT	MPX.filter ON/OFF control active:H
39	DOLBY ON/$\overline{\text{OFF}}$	OUT	Dolby IC control
40	DOLBY $\overline{\text{B}}$/C	OUT	
41	NC		
42	NC		

CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW PARTS LIST

REF.NO.	PARTS NO.	DESCRIPTION
A1	27110788	FRONT BRACKET
A2	27262443	PLATE (T1)
A3	27267830	GUIDE (POW)
A6	28191670A	CLEAR PLATE
A8	27130704B	BRACKET (F)
A10	27301772	CASSETTE FRAME AS
-a	27301773	CASSETTEFRAME
-b	27130725	BRACKET (FRM)
-c	27180435	SPRING
-d	801437	TAPPING SCREW
A11	28400520	DAMPER
A12	27273157	JOINT (EJ)
A13	27100277A	CHASSIS
A14	27180478	SPRING (B)
A15	27121810	REAR PANEL (P)
	27121812	REAR PANEL (W)
A16	27300750	BUSHING (CORD)
A18	27190480	HOLDER
A19	834430088	TAP-TIGHT SCREW 3TTS + 8BBC
A20	833430080	TAP-TIGHT SCREW 3TTP + 8PBC
A21	831130088	TAP-TIGHT SCREW 3TTW+8B
A22	830440069	TAP-TIGHT SCREW 4×6
A23	838426088	TAP-TIGHT SCREW 2.6TTB+8B
A301	28184479	TOP COVER
A501	1N164121	FRONT PANEL AS
A502	28198778	FACKET
A503	28141288	CUSHION
A504	28125248Y	END CAP (L)
A505	28125249Y	END CAP (R)
A507	28135199Y	BADGE
A508	8910301	STOP RING CS-3
A510	27301769	CASSETTE LID AS
-a	27301767	CASSETTE LID
-b	27301771	CASSETTE LID(BS)
-c	28191671	CLEAR PLATE
A511	28324912	KNOB (EJ)
A512	28324885	KNOB (REC)
A513	28324845	KNOB (LEV)
A514	28324140	KNOB (POW)
A516	27175254	LEG AS
JL701	2047172512	NCFC7-17251 2,FFC.
⚠ P901	253193HIT	AC CORD AS-CEE
⚠ T901	2300967A	NPT-1190P (P)
⚠	2300971A	NPT-1190DG (W)
⚠ S902	25065123	NSS-1258P (W)

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

ADJUSTMENT PROCEDURES

PRECAUTIONS

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

TEST EQUIPMENT/TOOLS REQUIRED:

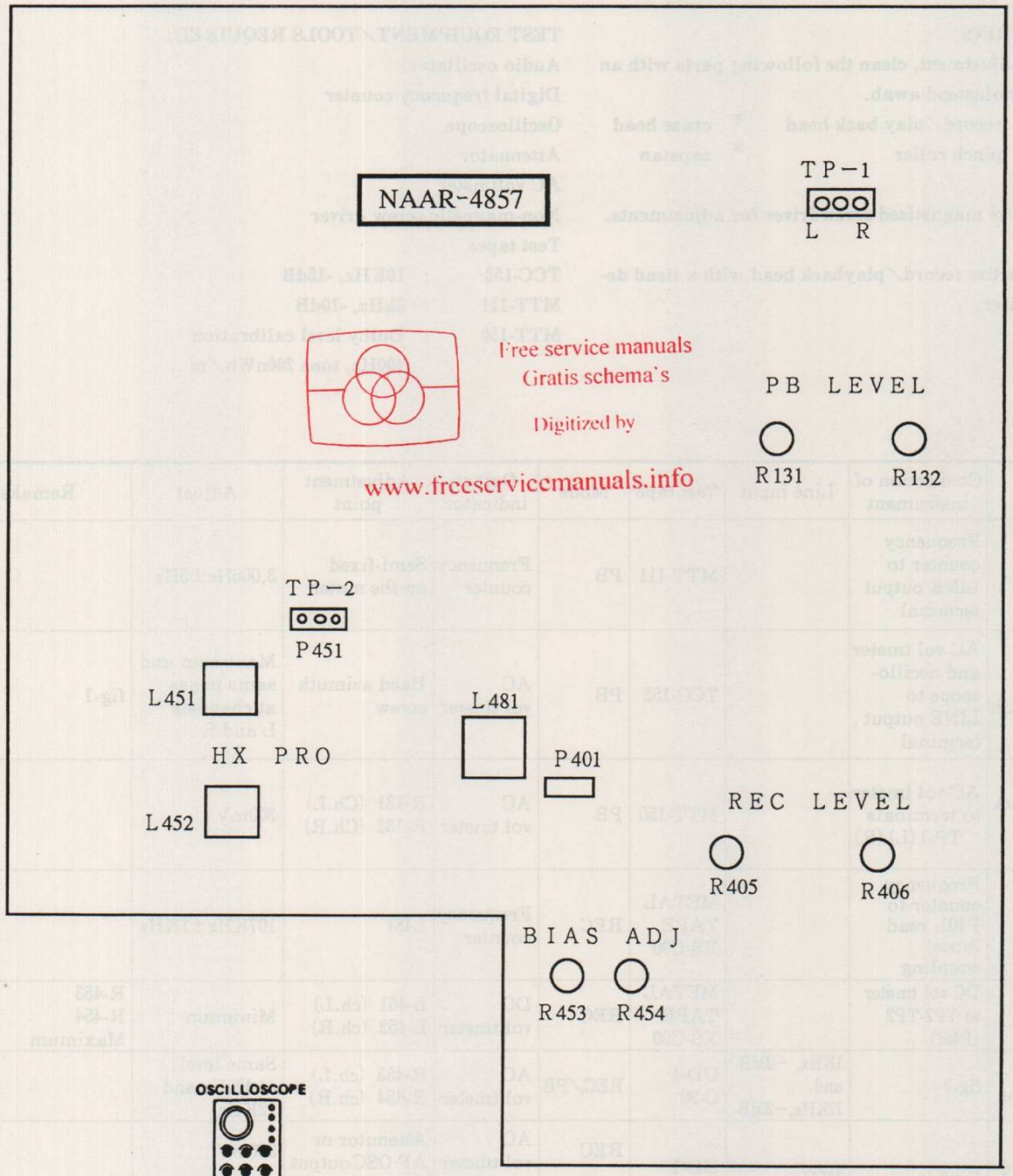
Audio oscillator
Digital frequency counter
Oscilloscope
Attenuator
AC voltmeter
Non-magnetic screw driver
Test tapes
TCC-153 : 10KHz, -15dB
MTT-111 : 3kHz, -10dB
MTT-150 : Dolby level calibration 400Hz, tone 200nWb/m

	Item	Connection of instrument	Line input	Test tape	Mode	Output indicator	Adjustment point	Adjust	Remaks
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	Attenutor 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
HIGH·····XL-Ⅱ C-90
METAL·····XS C-60

PLAY torque ·····30~70g/cm
FF.REW torque···80~180g/cm
Back tention ····· 6~12g/cm

ADJUSTMENT POINT



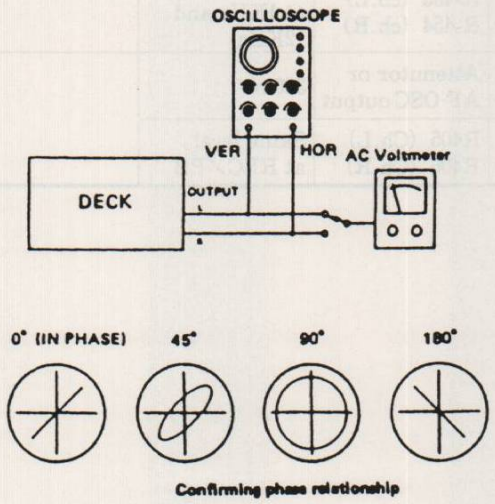


fig-1

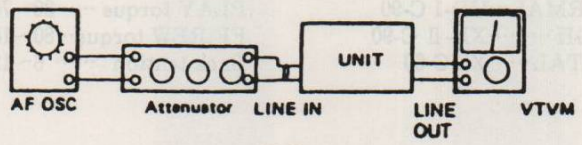
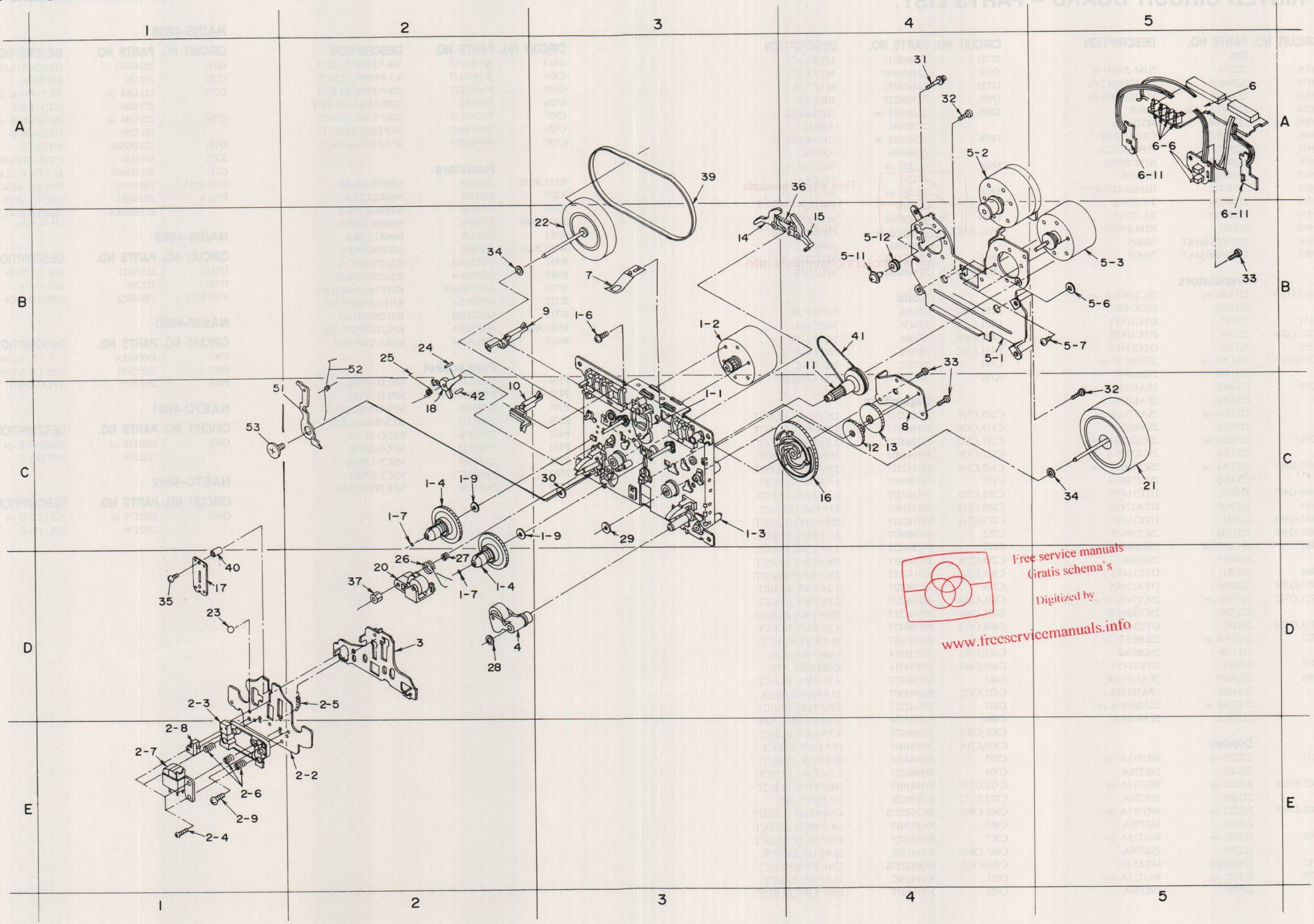


fig-2

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



TA-250

PRINTED CIRCUIT BOARD – PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Ics	
Q101	222956	NJM-2068D-D
Q131	22240631	HA12142NT-01
Q201	22240631	HA12142NT-01
Q251	222840661TOS	4066B
Q301	22240368	M5218AL
Q401	22240267	CXA1198AP
Q451	222959	μPC1297CA
Q501	22240040	NJM-2902N
Q502	22240313	BA6138
Q701	22240746	HD40A4240A57S
Q721	22240239	TA-7291S
Q731	22240239	TA-7291S
Q903	222465	NJM-4558D
Q904	222780055MAT	78M05
Q905	222780095MAT	78M09
	Transistors	
Q103,Q104	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q151	221281	DTC114YS
Q203,Q204	221299	DTC114TS
Q252	221282	DTC144ES
Q253,Q254	2211705 or	2SD655-E or
	2211706	2SD655-F
Q255	2214905,	2PA1015GR,
	2214906,	2PA1015BL,
	2213354 or	2SA933S-R or
	2213355	2SA933S-S
Q256	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q403,Q404	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q405-Q407	221281	DTC114YS
Q481	2212600	DTA124ES
Q482-Q484	221281	DTC114YS
Q485,Q486	2211544	2SC1959-Y
Q487	2212853 or	2SB1068-K or
	2212855	2SB1068-U
Q488	221281	DTC114YS
Q703,Q704	2212600	DTA124ES
Q711,Q712	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q713,Q714	221282	DTC144ES
Q722	2211705 or	2SD655-E or
	2211706	2SD655-F
Q732	221281	DTC114YS
Q906	2214905,	2PA1015GR,
	2214906,	2PA1015BL,
	2213354 or	2SA933S-R or
	2213355	2SA933S-S
	Diodes	
D151	223222 or	WG713A or
	223205	1SS270A
D321-D323	223222 or	WG713A or
	223205	1SS270A
D401-D403	223222 or	WG713A or
	223205	1SS270A
D701	223222 or	WG713A or
	223205	1SS270A
D702	224450562	MTZ5.6B
D703	223222 or	WG713A or
	223205	1SS270A

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D721	224450913	MTZ9.1C
D731	224450433	MTZ4.3C
D732	224450752	MTZ7.5B
D901	22380022F	RBV402
D905	22380035 or	GP104003E or
	22380046	AM01Z
D906	22380035 or	GP104003E or
	22380046	AM01Z
D907	223222 or	WG713A or
	223205	1SS270A
D908	223222 or	WG713A or
	223205	1SS270A
D909	224450562	MTZ5.6B
D911,D912	22380035 or	GP104003E or
	22380046	AM01Z
D913	224452204	MTZ22D
D914	224450562	MTZ5.6B
	Coils	
L101,L102	231086	NCH-2134
L201,L202	233436	NMC-6081
L401,L402	231086	NCH-2134
L451,L452	231100	NCH-4147
L481	231212	NLO-2057
X701	3010150	CST4.00MGW
	Capacitors	
C105,C106	393142217	220μF16V,ELECT.
C119,C120	391944717	470μF16V,ELECT.
C131,C132	391980227	2.2μF50V,ELECT.
C137,C138	391941007	10μF16V,ELECT.
C145,C146	393142217	220μF16V,ELECT.
C151	391980107	1μF50V,ELECT.
C201,C202	391980227	2.2μF50V,ELECT.
C209,C210	391941007	10μF16V,ELECT.
C217,C218	393142217	220μF16V,ELECT.
C252	391980477	4.7μF50V,ELECT.
C253	391980227	2.2μF50V,ELECT.
C255,C256	391941017	100μF16V,ELECT
C301,C302	393142217	220μF16V,ELECT.
C324	391980227	2.2μF50V,ELECT.
C401-C404	391980227	2.2μF50V,ELECT.
C407,C408	393142217	220μF16V,ELECT.
C409,C410	391980477	4.7μF50V,ELECT.
C451	391941007	10μF16V,ELECT.
C461,C462	370131014	100PF100V,APS
C463,C464	370134714	470PF100V,APS
C465	391980477	4.7μF50V,ELECT.
C471,C472	391941007	10μF16V,ELECT.
C481	393142217	220μF16V,ELECT.
C486	370131234	0.012μF100V,APS
C501,C502	391980477	4.7μF50V,ELECT.
C503,C504	391941007	10μF16V,ELECT.
C505	391944707	47μF16V,ELECT.
C704	391980227	2.2μF50V,ELECT.
C721,C731	391941017	100μF16V,ELECT
C722,C732	352980226	2.2μF50V,NP.
C903,C904	391954727S	4700μF25V,ELECT.
C905	391921017	100μF6.3V,ELECT.
C905	391921017	100μF6.3V,ELECT.
C907,C908	391941007	10μF16V,ELECT.
C909,C910	393082217S	220μF50V,ELECT.
C921	391941007	10μF16V,ELECT.
C922	391961017	100μF35V,ELECT.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C923	391961017	100μF35V,ELECT.
C924	391980477	4.7μF50V,ELECT.
C925	391962217	220μF35V,ELECT.
C926	3500181	2200μF16V,ELECT.
C927	393142217	220μF16V,ELECT.
C929	391941007	10μF16V,ELECT.
C930	391944707	47μF16V,ELECT.
	Resistors	
R131,R132	5210263	N06HR20KBC
R203	5104307	N09RLC250K
R204	5104330	N16RGL50KA
R405,R406	5210066	N06HR22KBD
R451	5104309	N09RLC5KB
R453,R454	5210263	N06HR20KBC
R461	443524704	RS1/2WBJ47Ω
R483	443521004	RS1/2WBJ10Ω
R701	49163392406	RM1/10IJ3.9KΩ×6
R722	453530224	RNU1/2WCJ2.2Ω
R732	443521004	RS1/2WBJ10Ω
R901,R902	453530334	RNU1/2WCJ3.3Ω
R915	453530104	RNU1/2WCJ1Ω
	Plug,socket	
P101	25055148	NPLG-4P132
P131	25055133	NPLG-3P117
P201	25045338	NPJ-4PDBL189
P301	25045337	HLJ-7000-01-3010
P401	25055150	NPLG-6P134
P451	25055132	NPLG-2P116
P701	25050849	NSCT-17P644
P702	25050527	NSCT-5P350
P705	25045330	NPJ-2PDBL184

NADIS-4858

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q751	22240737	HD404314A18S
Q752	212126	BJ199GK
Q753	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q754	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
D751	224450562	MTZ5.6B
X751	3010150	CST4.00MGW
C751	391941007	10μF16V,ELECT.
S751-S753	25035652	NPS-111-S604
P701A	25050881	NSCT-17P676
	27190838A	HOLDER(FL)

NASW-4859

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D761	225291D	SEL4910D-D
D762	225290	SEL4110R
S761-S771	25035652	NPS-111-S604

NASW-4860

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C901	3500065A	0.01μF AC400V,IS.
S901	25035636	NPS-111-L509P
P901	25055675	NPLG-2P631

NAETC-4861

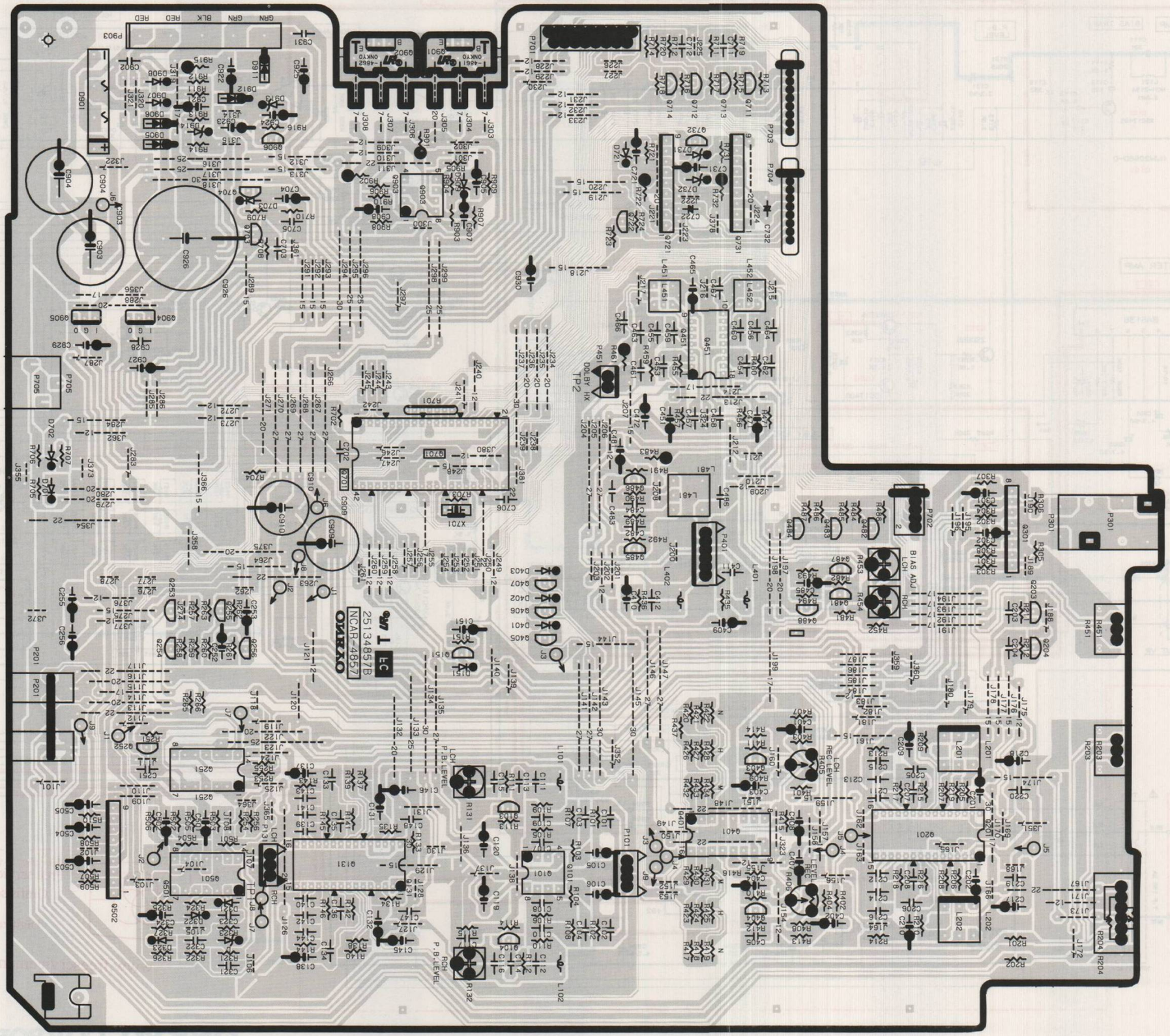
CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q901	2202115 or	2SD2061-E or
	2202116	2SD2061-F

NAETC-4862

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q902	2202175 or	2SB1370-E or
	2202176	2SB1370-F

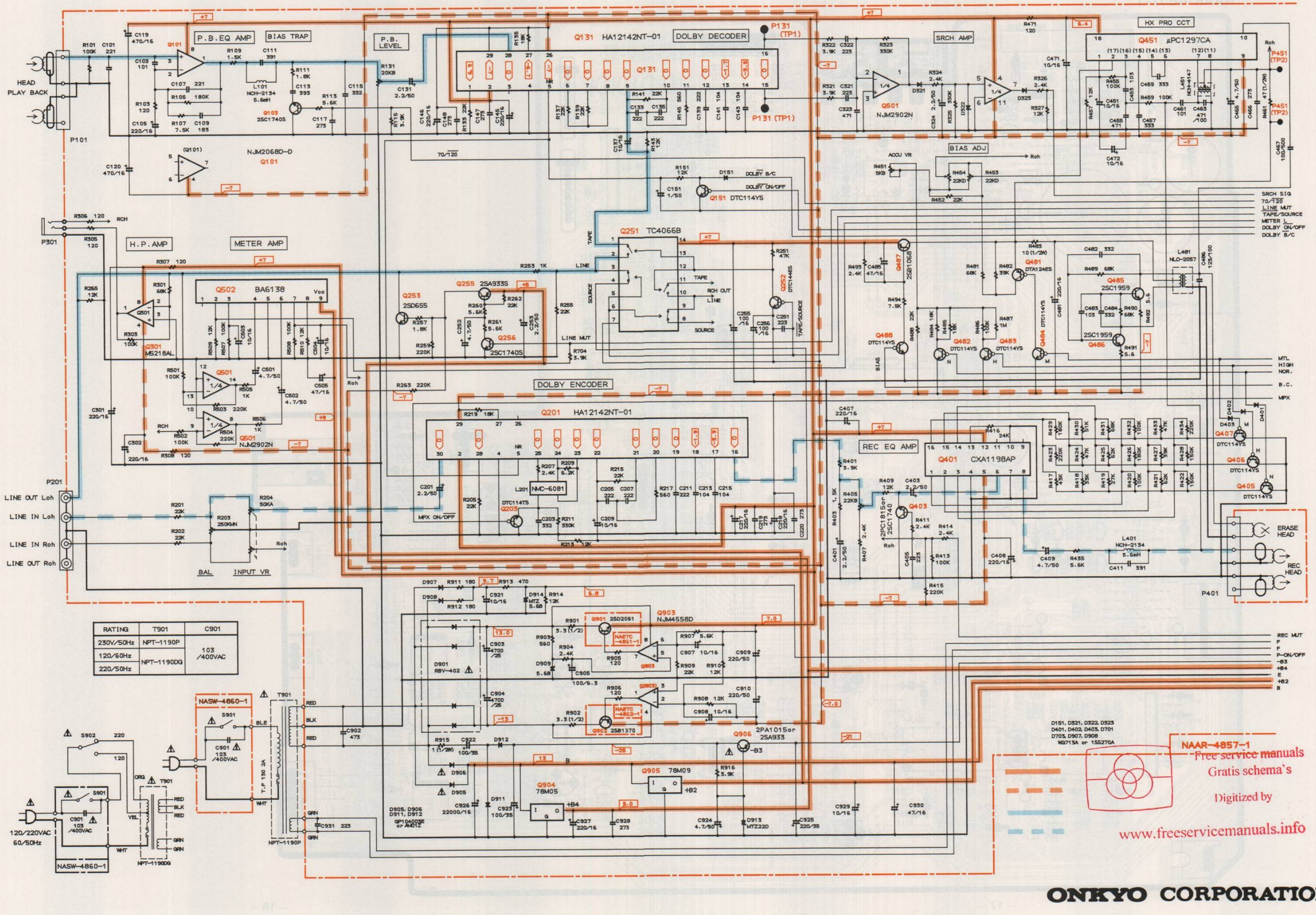
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

NAAR-4857-1



TA-250

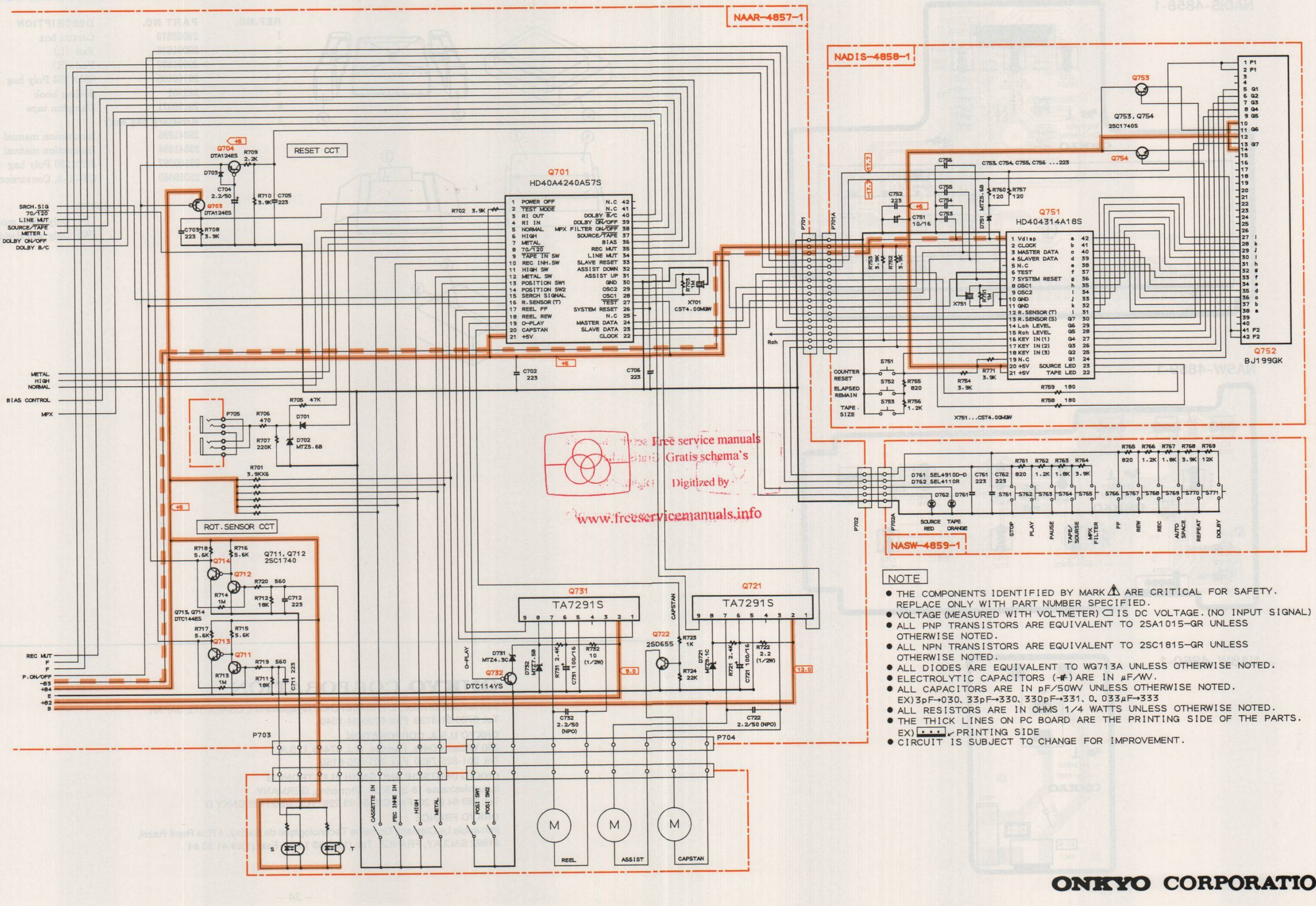
SCHEMATIC DIAGRAM 1/2



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

ONKYO CORPORATION

SCHEMATIC DIAGRAM 2/2



NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH VOLTMETER) ☐ IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO WG713A UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (⊣⊢) ARE IN μF/WV.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX) 3pF→030, 33pF→330, 330pF→331, 0.033μF→333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES ON PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) ▭ ↙ PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

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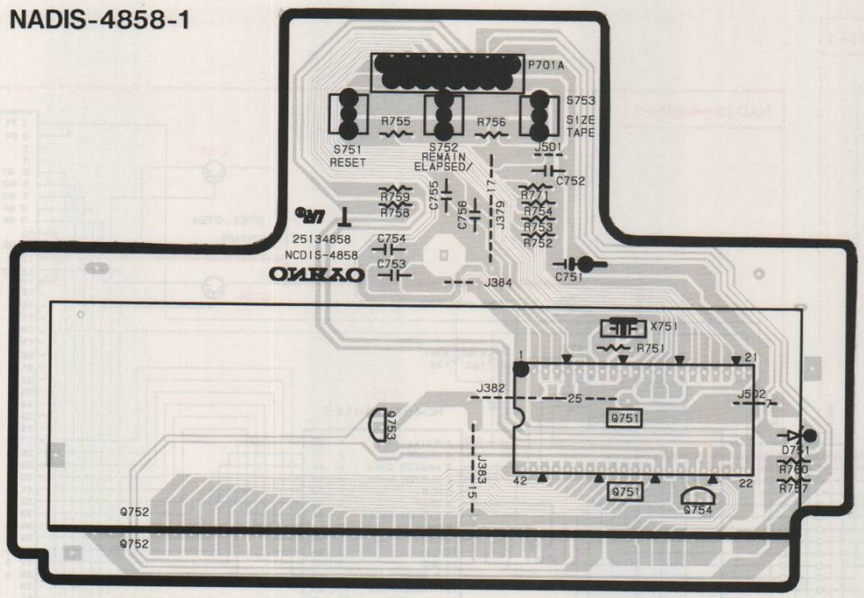
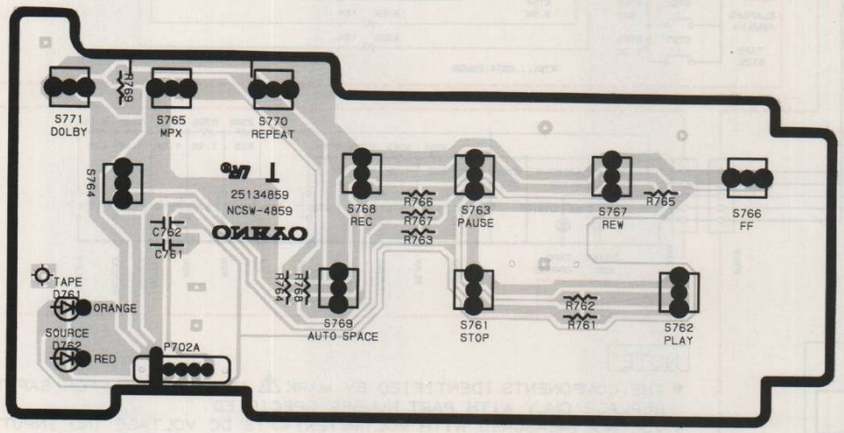
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

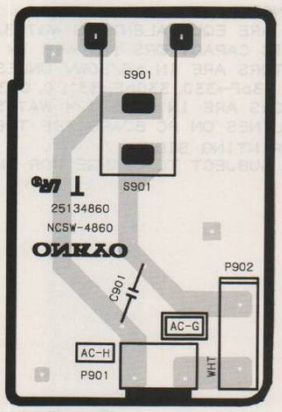
NADIS-4858-1



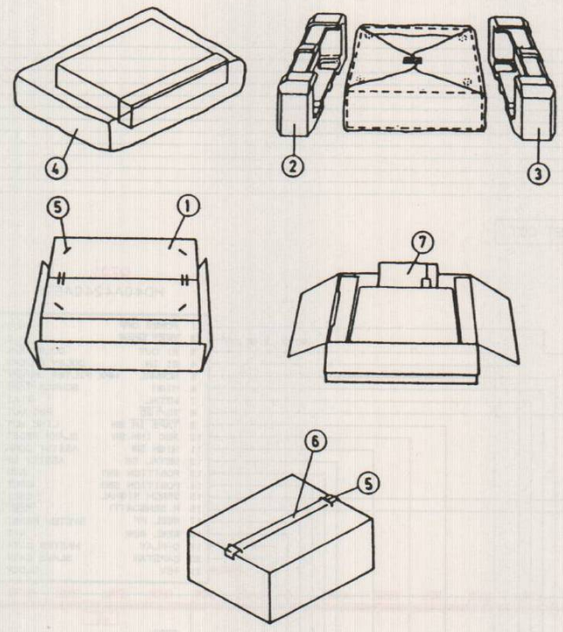
NASW-4859-1



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	**Accessary 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

ONKYO CORPORATION
International Division: 2-1, Nisshin-cho, Neyagawa-shi, OSAKA 572, JAPAN
Tel: 0720-31-8133 Fax: 0720-34-1340
ONKYO U.S.A. CORPORATION
200 Williams Drive, Ramsey, N.J. 07446, U.S.A.
Tel: 201-825-7950 Fax: 201-825-8150
ONKYO DEUTSCHLAND GMBH ELECTRONICS
Industriestrasse 18-20, 8034 Germering, GERMANY
Tel: 089 84 93 20 Fax: 089 84 93 226 TLX: 05-21726 ONKY D
ONKYO FRANCE
Immeuble Le Diamant, Domaine Technologique de Saclay, 4 Rue René Razel,
91892 SACLAY, FRANCE Tel: (1)69 33 14 00 Fax: (1)69 41 35 84

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