Ref. No. 3364

ONKYO SERVICE MANUAL

STEREO CASSETTE TAPE DECK MODEL TA-R500

Black model

UD	120V AC, 60Hz
UG	220V AC, 50Hz
UW	120 or 220V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS INDENTIFIED 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.

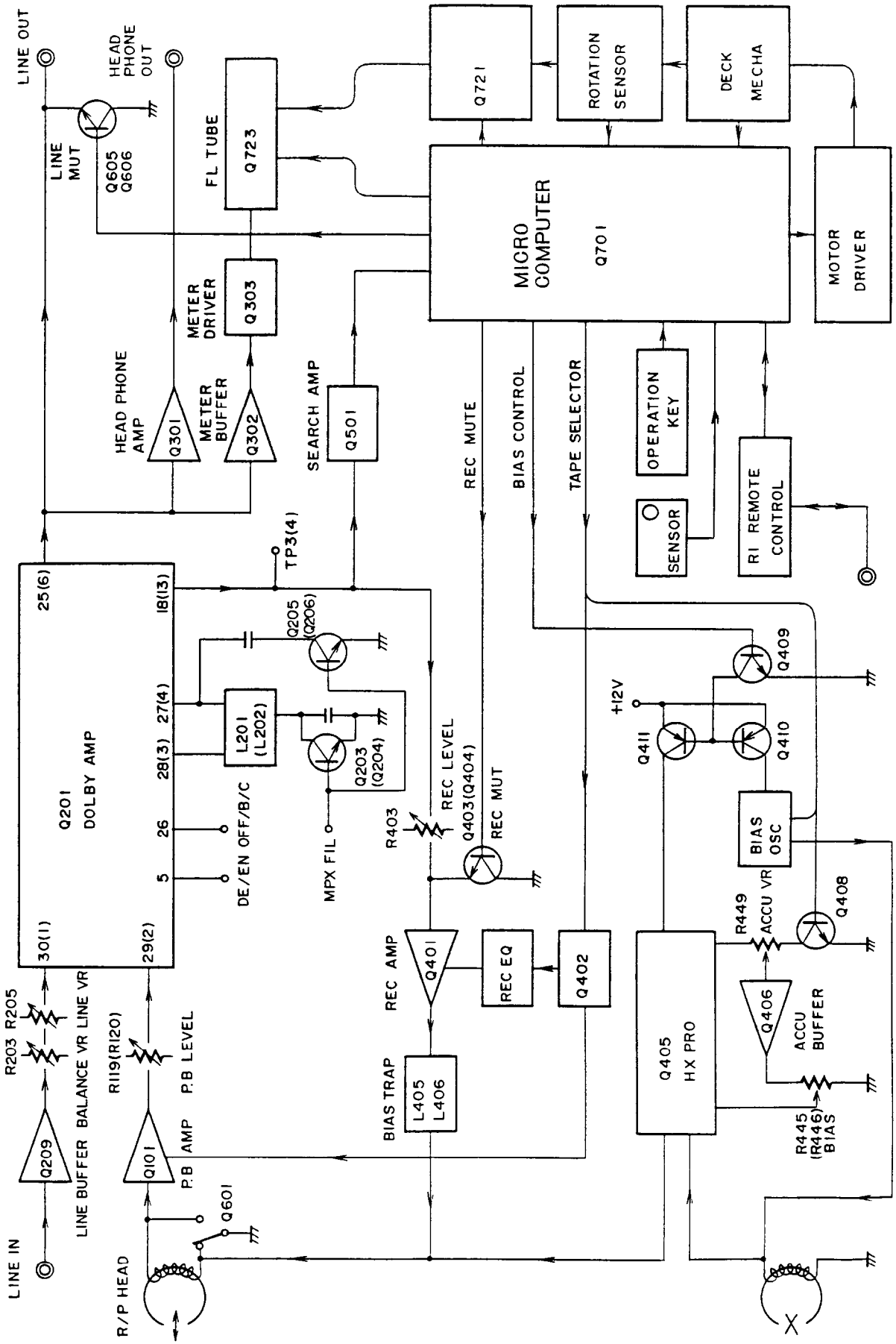
SPECIFICATIONS

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:	0.055% (WRMS)
Frequency Response:	20 – 17,000Hz (Normal) (30 – 16,000Hz±3dB) 20 – 18,000Hz (High) (30 – 17,000Hz±3dB) 20 – 19,000Hz (Metal) (30 – 18,000Hz±3dB)
S/N Ratio:	58dB (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: 60mV Input impedance: 50kohms
Outputs:	Line OUT: 2 Standard output level: 500mV (0dB) Optimum load impedance: over 50 kohms Headphone jack: 1 Optimum load impedance: 8 to 200 ohms
Motors:	DC servo motor: 1 DC motor: 2
Heads:	REC/PB: Special Hard Permalloy×1; Erase head: Ferrite×1
Power Supply Rating:	U.K. and Australian models: AC 240V, 50Hz U.S.A. models: AC 120V, 60Hz Worldwide models: AC 120V and 220V switchable, 50/60Hz
Power Consumption:	22 watts
Dimensions:	435(W)×132(H)×366(D)mm (17-1/8″×5-3/16″×14-7/16″)
Weight:	6.2kg. (13.7 lbs.)
Supplied Accessories:	Connecting cable×2 RC-169K remote control transmitter UM-4/R03/AAA batteries×2

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

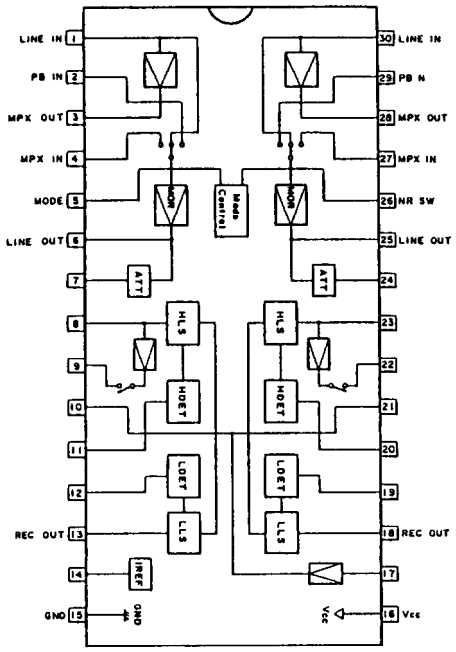
ONKYO®
AUDIO COMPONENTS

BLOCK DIAGRAM

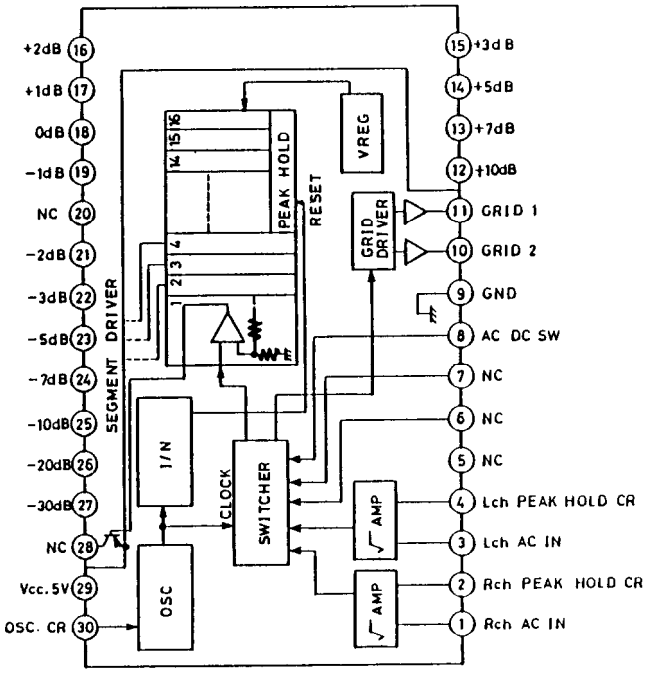


IC BLOCK DIAGRAM

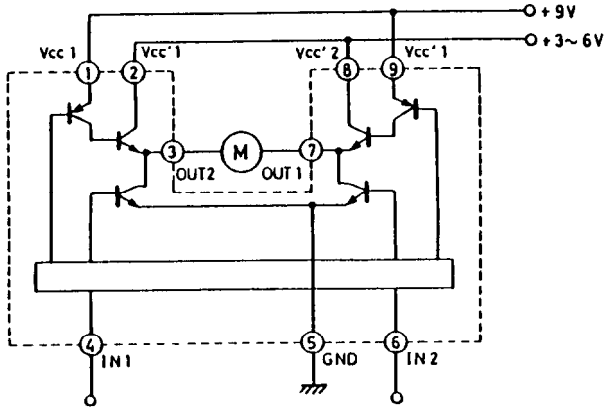
CXA1331S (DOLBY NR)



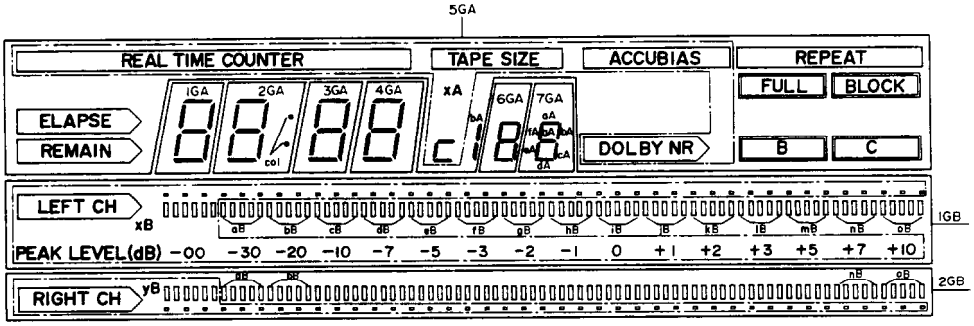
BA6800AS (METER DRIVE)



M54544AL (MOTOR DRIVE)



BG802G (DISPLAY TUBE)



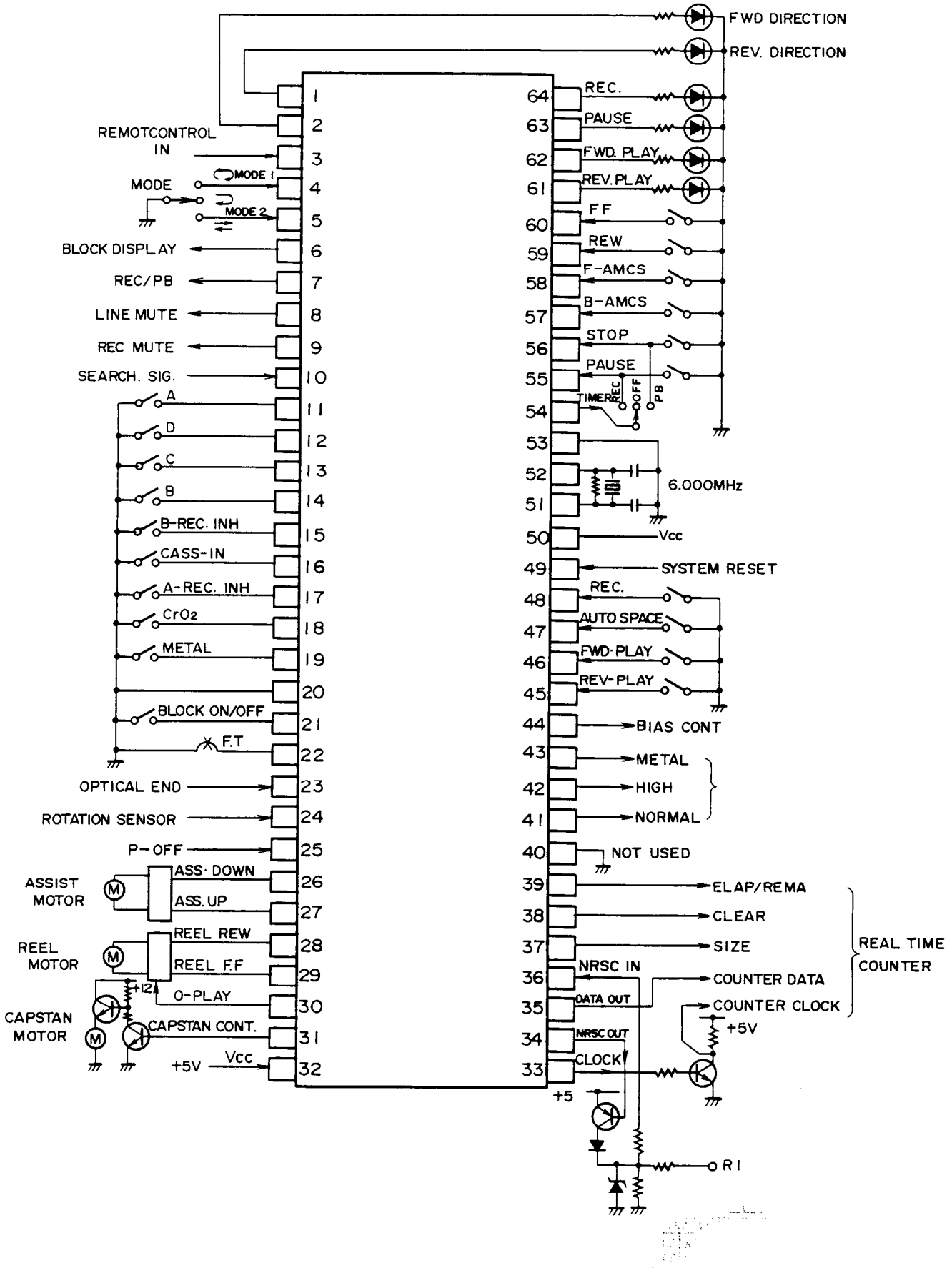
PIN CONNECTION

PIN NO.	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	nB	oB	yB	xB	2GB	1GB	NC	NC	NC	NC	hA	gA	fA	eA	dA	cA	bA	aA	jA	iA	7GA	6GA	5GA	4GA	3GA	2GA	1GA	xA	pA	oA	nA	mA	ℓA	kA	rA	qA	NP	NP	F1	F1

PIN NO.	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
CONNECTION	F2	F2	NP	NP	aB	bB	cB	dB	eB	fB	gB	hB	iB	jB	kB	ℓB	mB

Note 1.)NP·····No pin.
2.)NC·····No connection
3.)F1,F2·····Filament
4.)1GA~7GA·····Grid
5.)1GB~2GB·····Grid

MICRO COMPUTER (HD614049SA39)

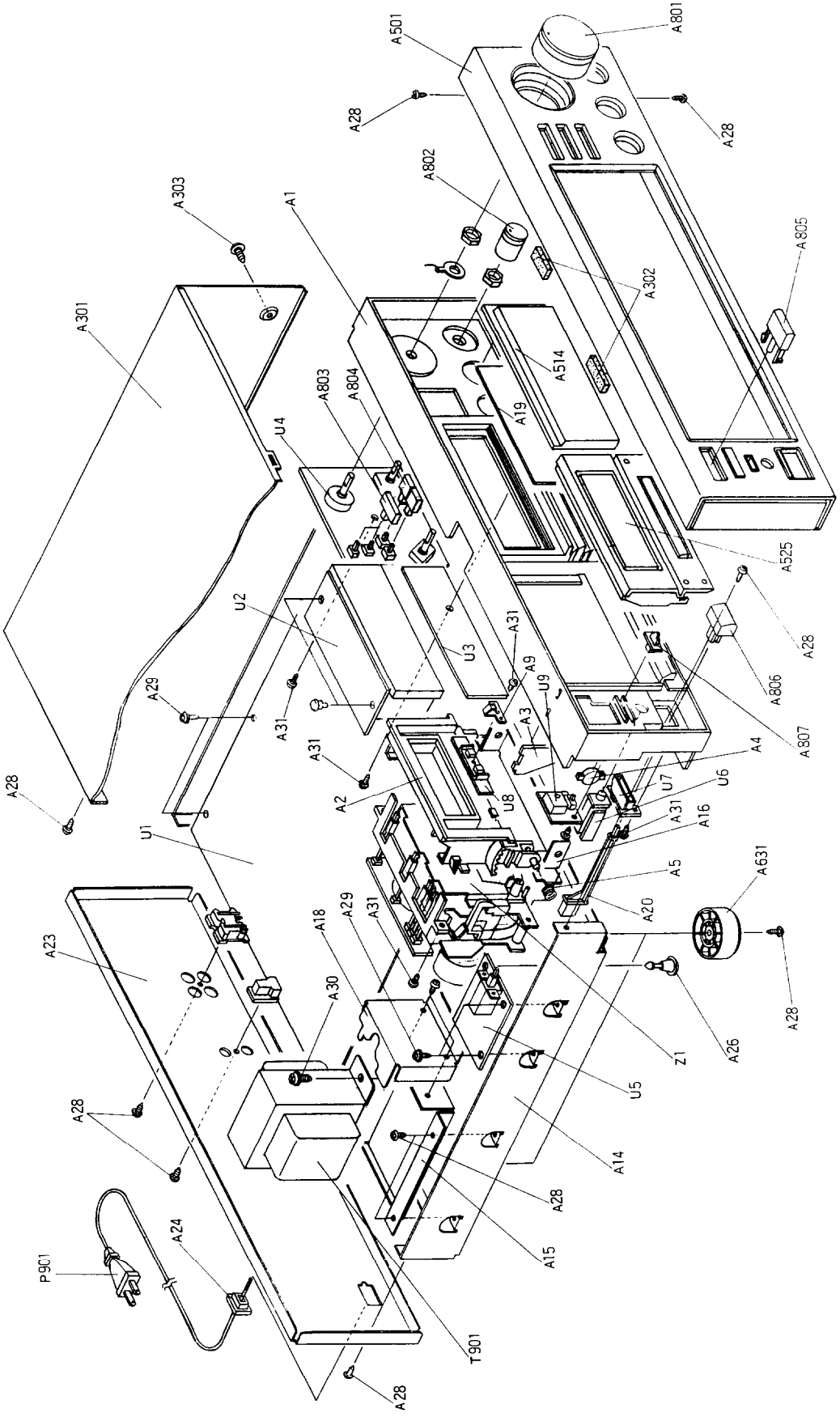


MICRO COMPUTER (HD614049SA39)

Terminal description

Port No.	Name	Function
1	REV. DIRECTION LED	REV. Direction display output
2	FWD. DIRECTION LED	FWD. Direction display output
3	REMOTE-CONTROL IN	Remote control input
4	MODE 1	Reverse mode switch input
5	MDOE 2	Reverse mode switch input
6	BLOCK DISPLAY	Block repeat display output
7	REC/$\overline{PB}$	Recording/play back select output
8	LINE MUTE	Line muting output
9	REC MUTE	recording muting output
10	SEARCH SIG.	Search signal input
11~14	MECHA. POSITION $\overline{A}$~$\overline{D}$	Mecha position sensor switch input
15	SIDE-B REC. INHIBITING	Side-B record inhibit pin sensor
16	$\overline{CASSETTE\ IN}$	Cassette tape sensor switch input
17	SIDE-A REC. INHIBITING	Side-A record inhibit pin sensor
18	CrO_2 SWITCH	Tape type sensor switch input
19	METAL SWITCH	Tape type sensor switch input
20	NOT USED	
21	BLOCK REPEAT $\overline{ON}$/OFF	Block repeat ON/OFF select switch
22	$\overline{F.T}$	
23	OPTICAL END SENSOR	Optical tape end detection input
24	ROTATION SENSOR	Reel rotation sensor input
25	P-OFF	Power off detection input
26	ASSIST DOWN	Assist motor REV-PLAY drive output
27	ASSIST UP	Assist motor FWD-PLAY drive output
28	REEL REW	Reel motor REW rotation control output
29	REEL FF	Reel motor FF rotation control output
30	O-PLAY	Reel motor rotation torque
31	CAPSTAN CONTROL	Capstan rotation control output
32	V_{CC}	+5V
33	CLOCK	Master-slave communication clock output
34	$\overline{NRSC\ OUT}$	Serial code reciprocal control output
35	DATA OUT	Master-slave communication data output
36	NRSC IN	Serial reciprocal control signal input
37	$\overline{COUNTER\ SIZE}$	Tape size select output
38	$\overline{COUNTER\ CLEAR}$	Tape counter clear output
39	$\overline{COUNTER\ ELAP/REMA}$	Tape elap/rema select output
40	NOT USED	
41	NORMAL	Normal tape end detection output
42	HIGH	High tape end detection output
43	METAL	Metal end detection output
44	BIAS CONTROL	Bias oscillator control/output
45	$\overline{REV\text{-}PLAY\ KEY}$	REV play key input
46	$\overline{FWD\text{-}PLAY\ KEY}$	FWD play key input
47	$\overline{AUTO\text{-}SPACE\ KEY}$	Auto-space key input
48	$\overline{REC\ KEY}$	Record key input
49	SYSTEM RESET	Computer system reset
50	$\overline{TEST}$	Computer test input (normally used at V_{CC})
51, 52	OSC1, OSC2	System clock oscillator terminal
53	GND	GND
54	TIMER IN	Timer play/record input
55	$\overline{PAUSE\ KEY}$	Pause key input
56	$\overline{STOP\ KEY}$	Stop key input
57	$\overline{B\text{-}AMCS\ KEY}$	Side-B AMSC key input
58	$\overline{F\text{-}AMCS\ KEY}$	Side-A AMSC key input
59	$\overline{REW\ KEY}$	REW key input
60	$\overline{FF\ KEY}$	FF key input
61	REV. PLAY LED	REV play display output
62	FWD. PLAY LED	FWD play display output
63	PAUSE LED	Pause display output
64	REC. LED	Record display output

CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
A1	27110555	FRONT BRACKET
A2	28400568A	FRAME AS (CASSETTE)
-a	28400569A	FRAME (CASSETTE)
-b	27180435	SPRING
-c	28140987	CUSHION
A3	27273129	JOINT (EJ)
A4	28400520	DAMPER
A5	27180454	SPRING
A9	27141389	BRACKET (GND)
A10	260217	BINDER
A11	28140373	CUSHION
A14	27100210B	CHASSIS
A15	27130608-1	BRACKET (PT)
A16	27130610A	BRACKET (MECHANISM)
A18	27141403	BRACKET (T)
A19	28133243	BACK PLATE
A20	27273069A	JOINT (POW)
A23	27121339	BACK PANEL (D)
	27121340	BACK PANEL (G)
	27121342	BACK PANEL (W)
A24	27300750	BUSHING (CORD)
A26	27190524	HOLDER
A28	834430088	TAP-TIGHT SCREW 3TTS×8B (BC)
A29	831130088	TAP-TIGHT SCREW 3TTW×8B
A30	830440069	TAP-TIGHT SCREW 4TTC×6C (BC)
A31	833430080	TAP-TIGHT SCREW 3TTP×8P (BC)
A32	831430100	TAP-TIGHT SCREW 3TTW×10P (BC)
A301	28184397	TOP COVER
A302	28140408	CUSHION
A303	838440089	TAP-TIGHT SCREW 4TTB×8C (BC)
A501	1N087121	FRONT PANEL
-a	28125194-1A	END CAP (L)
-b	28125195-1A	END CAP (R)
-c	27267667	GUIDE (VOL)
-d	27267669	GUIDE (EJ)
-e	27267671	GUIDE (POW)
-f	28198744	FACET (POW)
-g	28191558	CLEAR PLATE (S)
-h	27215178	COSMETIC FRAME
-i	27267673	GUIDE (TIM)

REF.NO.	PART NO.	DESCRIPTION
A514	28191559	CLEAR PLATE
A525	28400570	CASSETTE LID AS
-a	28400574	CASSETTE LID
-b	28400572	CASSETTE LID
-c	28400576	WINDOW
-d	28198745	FACET (F)
A631	27175153-1	LEG
A801	28323395A	KNOB (LEV)
A802	28323979	KNOB (BAL)
A803	28323981	KNOB (PUSH)
A804	28323983	KNOB (DOL)
A805	28323985	KNOB (EJ)
A806	28323987	KNOB (POW)
A807	28323989	KNOB (TIM)
P702A	2009990074	NSAS-18P0111
P901	⚠ 253112A	AC CORD AS-UC-4 #18 (D)
	253149	AC CORD AS-CEE (G/W)
S902	⚠ 25065123	NSS-1258P (W)
T901	⚠ 2300527	NPT-1067D (D)
	⚠ 2300528	NPT-1067G (G)
	⚠ 2300529A	NPT-1067DG (W)
U1	1N087560-2	NAAF-3860-2
U2	1N087561-2	NADIS-3861-2
U3	1N087562-2	NASW-3862-2
U4	1N087563-2	NAAF-3863-2
U5	1N087564-2	NAPS-3864-2
U6	1N087565-2	NAETC-3865-2
U7	1N087566-2	NADIS-3866-2
U8	1N087567-1	NADIS-3867-1
U9	1N087568-1	NADG-3868-1
Z1	244140	NDM-132, CASSETTE DECK MECHANISM

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

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

PRINTED CIRCUIT BOARD PARTS LIST

NAAF-3860-2

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ics	
Q101	222956	NJM-2068D-D
Q201	22240316	CXA1331S
Q209	222502	NJM-4558DX
Q301, Q302	222652	M5218L
Q401	222808	M5218P
Q402	22240240	IR2C30
Q405	222959	μPC1297CA
Q406	222465	NJM-4558D
Q501	222940	BA335H
Q601	22240147	μPC1330HA
Q701	22240340	HD-614049SA39
Q704, Q706	222953	M-54544AL
Q709	222465	NJM-4558D
Q909	222465	NJM-4558D
Q910	222780055MIT	78M05
	Transistors	
Q103, Q104	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q203-Q207	221281	DTC114YS
Q208	2213090	DTA114YS
Q403, Q404	2212794 or	2SD1468-R or
	2212795	2SD1468-S
Q407, Q408	221282	DTC144ES
Q409	221281	DTC114YS
Q410, Q411	2211455	2SA1015-GR
Q412	2201540	2SD947
Q413	221282	DTC144ES
Q414, Q415	2211544	2SC1959-Y
Q602	221281	DTC114YS
Q603	2211455	2SA1015-GR
Q605, Q606	2211706	2SD655-F
Q702	221281	DTC114YS
Q703	2212855 or	2SB1068-U or
	2212853	2SB1068-K
Q705	2202115 or	2SD2061-E or
	2202116	2SD2061-F
Q707	221281	DTC114YS
Q708	2201540	2SD947
Q710	2211255	2SC1815-GR
Q711	221282	DTC144ES
Q712	2211255	2SC1815-GR
Q713	221282	DTC144ES
Q714	2213090	DTA114YS
Q715	221281	DTC114YS
Q901, Q902	2212304 or	2SK381-D or
	2211945	2SK246-GR
Q903, Q905	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q904, Q906	2213074	2SA933R
Q907	2201285 or	2SD882-Q or
	2201286	2SD882-P
Q908	2201275 or	2SB772-Q or
	2201276	2SB772-P
Q911	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
Q912	2202115 or	2SD2061-E or
	2202116	2SD2061-F
Q913, Q914	2212600	DTA124ES
Q915	2211455	2SA1015-GR

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D201, D202	224150753	05AZ7.5Z
D203-D206	223163	1SS133
D601, D602	223163	1SS133
D605, D606	223150,	US1040,
	223124 or	1S2473 or
	223145	1S2076TD
D701	224150683	05AZ6.8Z
D702, D703	223163	1SS133
D704	224150562	05AZ5.6Y
D705	223163	1SS133
D706	224150512	05AZ5.1Y
D901-D904	22380029F	HER102
D905-D909	22380035	GP104003E
D910, D911	223163	1SS133
D912	224150512	05AZ5.1Y
D913	224151303	05AZ13Z
D914	224450623	MTZ6.2C
D915	223163	1SS133
D916	224152001	05AZ20X
D917	224150512	05AZ5.1Y
	Coils	
L201, L202	233408	NMC-6080
L401, L402	231089	NCH-2137
L403, L404	231082	NCH-2130
L405, L406	233314	NCH-2097
L407, L408	231127	NCH-4183
L409	231152	NLO-2051
	Ceramic osc	
X701	3010149	CST6.00MGW

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C105, C106	391981017	100μF50V, ELECT.
C117, C118	391984717	470μF50V, ELECT.
C203-C206	391780229	2.2μF50V, ELECT.
C207, C208	391741009	10μF16V, ELECT.
C217, C218	391780229	2.2μF50V, ELECT.
C227, C228	391944717	470μF16V, ELECT.
C231, C232	391780229	2.2μF50V, ELECT.
C301, C302	391741009	10μF16V, ELECT.
C411, C412	391741009	10μF16V, ELECT.
C413, C414	354781099	0.1μF50V, ELECT.
C415, C416	391741009	10μF16V, ELECT.
C423, C425	391942217	220μF16V, ELECT.
C439, C440	370131014	100PF 100V, APS
C441, C442	370131514	150PF 100V, APS
C448, C449	391741009	10μF16V, ELECT.
C451, C452	354722219	220μF6.3V, ELECT.
C453	354744709	47μF16V, ELECT.
C456	370131034	0.01μF100V, APS
C501	391780229	2.2μF50V, ELECT.
C505	391741009	10μF16V, ELECT.
C601	391941017	100μF16V, ELECT
C605, C607	354780479	4.7μF50V, ELECT.
C701	391741009	10μF16V, ELECT.
C703	352942206	22μF16V, NP.
C706	352942206	22μF16V, NP.
C708	352982296	0.22μF50V, NP.
C907, C908	391962227S	2200μF35V, ELECT.
C915, C916	391741009	10μF16V, ELECT.
C917	391941017	100μF16V, ELECT
C923	354751029S	1000μF25V, ELECT.
C924	3504168	13000μF25V, ELECT.
C925	354780109	1μF50V, ELECT.
C926	391942217	220μF16V, ELECT.
C928, C929	354744709	47μF16V, ELECT.
C931	354780479	4.7μF50V, ELECT.
C932	354780109	1μF50V, ELECT.
C935, C936	354780479	4.7μF50V, ELECT.
	Resistors	
R119, R120	5210220	N06HR50KBD
R403, R404	5210217	N06HR10KBD
R445, R446	5215045	N08HR 10KBC
R708	49163392412	3.9KΩ×12, 1/10W
R712	441722704F	RS2WBJ27Ω
R730	49163392406	RM1/10IJ3.9KΩ×6
R901, R902	442520224F	RS1/2WBJ 2.2Ω
R915	442522294F	RS1/2WBJ 0.22Ω
R916	442524794F	RS1/2WBJ 0.47Ω
R917	441723904F	RS2WBJ 39Ω
R927	442520104F	RS1/2WBJ 1Ω

CIRCUIT NO.	PART NO.	DESCRIPTION
	Plug, Socket	
P101	25055150	NPLG-6P134
P201	25045165	NPJ-4PDBL59
P202	25050269	NSCT-5P97
P203	25050270	NSCT-6P98
P302	25050267	NSCT-3P95
P401	25055147	NPLG-3P131
P701	25045172	HSJ-1003-01-020
P702	25055139	NPLG-9P123
P703	25055139	NPLG-9P123
P704	25055184	NPLG-3P168
P705	25050270	NPLG-6P98
P706	25050273	NPLG-9P101
P707	25050272	NSCT-8P100
P708	25050270	NSCT-6P98
P709	25055135	NPLG-5P119
P710	25055136	NPLG-6P120
P711	25050270	NSCT-6P98
P712	25050268	NPLG-4P96
P713	25050267	
	Miscellaneous	
	27141059	BRACKET
	27160211	RAD-68, RADIATOR
	27160029	RAD-07, RADIATOR
	82143006	3P+6FN(BC), SCREW

NADIS-3861-2

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ics	
Q303	22240170	BA6800AS
Q721	22240084	HD614128
	Transistors	
Q305, Q306	2213090	DTA114YS
Q722	2213284 or	2SC1740S-R or
	2213285	2SC1740S-S
	Display	
Q723	212082	BG-802G
	Ceramic OSC	
X702	3010143	CST-3.00MGW
	Capacitors	
C301, C302	391741009	10μF16V, ELECT.
C303, C304	354742209	22μF16V, ELECT.
C721	391741009	10μF16V, ELECT.
	Resistors	
R313, R314	5215044	N08HR5KBC
R321	49163104415	RM1/10IJ100KΩ×15

NASW-3862-2

CIRCUIT NO.	PART NO.	DESCRIPTION
	LED	
D711, D712	225141	SEL2213C
D713, D714	225137CG, 225137DG or 225137DY	SEL2413CG, SEL2413DG or SEL2413DY
	Switchs	
S701-S713	25035548	NPS-111-S510, PUSH
	Holder	
	27190764A	HOLDER(LED-4)

NAAF-3863-2

	Resistors	
R203	5104268	N14RGLC100KMN25Z
R205	5104260	N16RGL50KA25Z
R449	5104271	N14RLC5KB25Z
	Switch	
S201-S203	25035514	NPS-122-L476
S601	25035514	NPS-122-L476
S604	25030327	NRSF-113-25SRB
	Socket	
P202A	2050012	NCS-5P3E30

NAPS-3864-2

	Capacitor	
C901	3500065A	0.01μF, AC100V, IS.
	Switch	
S901	25035558	NPS-111-L520P
	Terminal	
	25060092	NMT-1833

NAETC-3865-2

	Headphone jack	
P301	25045139	HLJ0540-01-010

NADIS-3866-2

	LED	
D921, D922	225142	SEL2913K
	Holder	
	27190454A	HOLDER(PLED)

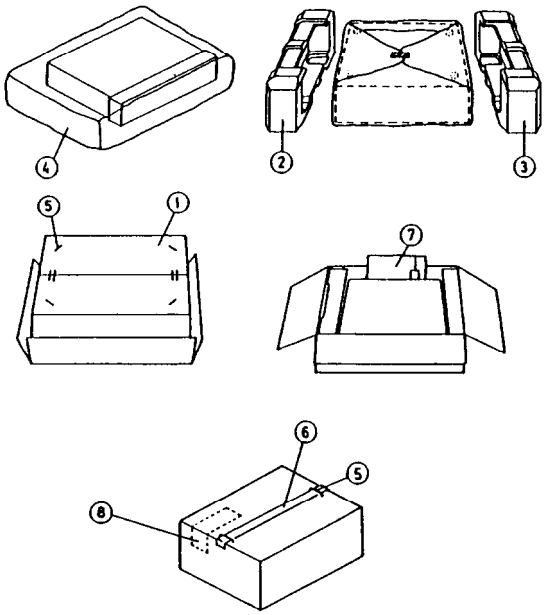
NADIS-3867-1

	LED	
D715, D716	225137CG, 225137DG or 225137DY	SEL2413CG, SEL2413DG or SEL2413DY
	Socket	
P704A	2000490	NSAS-6P446
	Holder	
	27190763	HOLDER(LED-2)

NADG-3868-1

Q731	24130003	GP1U50XS
	Switch	
S714	25065297	NSS-23119
	Socket	
P710A	2000495	NSAS-6P-451

PACKING VIEW



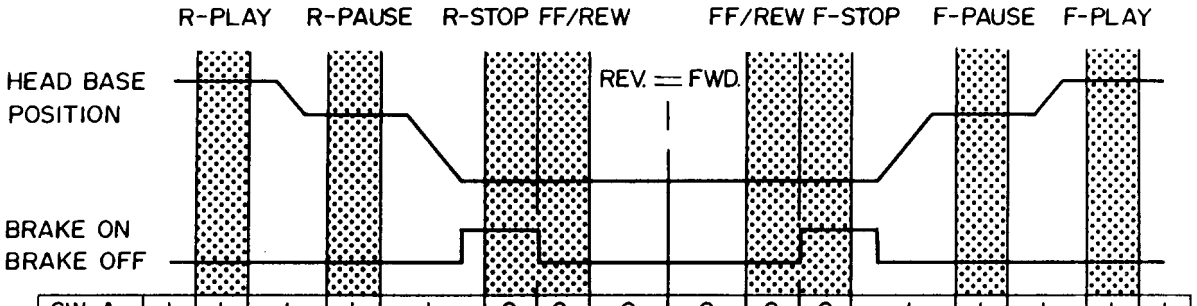
D Model

REF.NO.	PART NO.	DESCRIPTION
1	29052056	Master carton box
2	29091264A	Pad (L)
3	29091265A	Pad (R)
4	29095608	Protection sheet
	29100105	620×550 Poly bag
5	282301	Sealing hook
6	260012	Damplon tape
7	**Accessary bag ass'y**	
	29341512	Instruction manual
	2010098A	Connection cable
	29365019	Warranty card (N)
	29358002H	Service station list (N)
	29100006A	350×250 Poly bag
	24140169	RC-169K, Remote control
	3010124	UM-4, Batteris×2

G/W Model

REF.NO.	PART NO.	DESCRIPTION
1	29052056	Master carton box
2	29091264A	Pad (L)
3	29091265A	Pad (R)
4	29095608	Protection sheet
	29100105	620×550 Poly bag
5	282301	Sealing hook
6	260012	Damplon tape
7	**Accessary bag ass'y**	
	29341512	Instruction manual
	2010098	Connection cable
	25055018	CV plug CV-K-1 (W)
	29100006A	350×250 Poly bag
	24140169	RC-169K, Remote control
	3010124	UM-4, Batteries×2

MECHANICAL POSITION CORD



SW-A	I	I	I	I	I	O	O	O	O	O	O	I	I	I	I	I
SW-B	O	O	O	I	I	I	I	O	O	I	I	I	I	O	O	O
SW-C	O	O	I	I	O	O	I	I	I	I	O	O	I	I	O	O
SW-D	I	O	O	O	O	O	O	O	I	I	I	I	I	I	I	O

NOTE

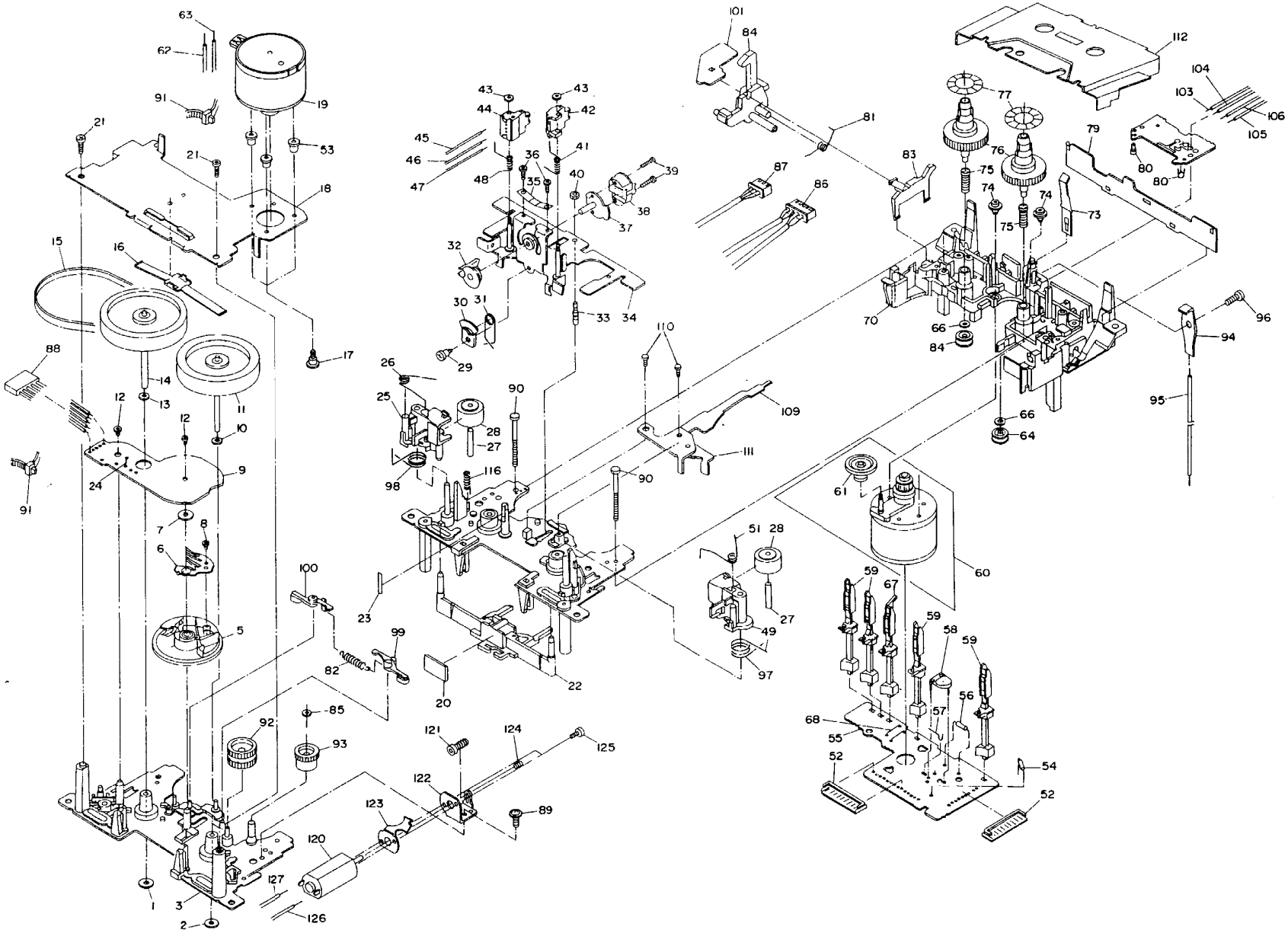
I : High level

O : Low level

TAPE MECHANISM PARTS LIST

REF.NO.	PART NO.	DISCRIPTION
1	24610673	WASHER
2	24611295	WASHER 2.2×7×0.8
3	24611437	MECHANISM CHASSIS
5	24602433	CAM
6	24606282	CONTACT
7	24611337	WASHER 3×8×.5
8	82112003	PAN-HEAD SCREW M2+3
9	24606431	P.C.B. AS
10	24611294	WASHER 2.3×4.7×0.5
11	24602446	FLYWHEEL
12	24609043	TAPPING SCREW M2×4.5
13	24610515	WASHER
14	24602435	FLYWHEEL
15	24602436	BELT
16	24611326B	THRUST SPRING
17	24609041	PAN HEAD SCREW M2.6×1.5
18	24611438	BRACKET (MOTOR)
19	24601254	CAPSTAN MOTOR AS
20	24611444	CUSHION
21	833126082	TAPPING SCREW M2.6×8
22	24603394	SLIDE LEVER
23	24611336	REFLECTOR
24	24606422	JUMPER LEAD
25	24602522	PINCH ROLLER AS (L)
26	24605667A	SPRING (PINCH ROLLER) L
27	24604088	SHAFT (PINCH ROLLER)
28	24602523	PINCH ROLLER AS
29	24609010	SPECIAL SCREW M2×3
30	24602440	GEAR
31	24605743	SPRING
32	24602441	GEAR (HEAD)
33	24604089A	SHAFT (HEAD BASE)
34	24611328	HEAD BASE AS
35	24605669	SPRING
36	801337	SCREW (AZIMUTH)
37	24611329	BRACKET AS (HEAD)
38	24600108	HEAD AS
39	82111406	PAN HEAD SCREW M1.4+6
40	863125	NUT M2.5
41	24605670	SPRING
42	24611330	TAPE GUIDE
43	863120	NUT M2
44	24606289	SENSOR
45	24606432	LEAD WIRE (BLACK)
48	24605671	SPRING
49	24602524	PINCH ROLLER AS (R)
51	24605672A	SPRING (PINCH ROLLER) R
53	24611439	CUSHION
55	24606284	P.C.B.
57	24606357	LEAD (GND)
59	24606285	LEAF SWITCH
60	24601230A	REEL MOTOR AS
61	24602442A	IDLER GEAR
64	24602443	BRAKE PULLEY
66	24610952	WASHER 2.6×5.5×0.13
67	24606368A	LEAF SWITCH
68	24606423	JUMPER LEAD
70	24611440	SUB CHASSIS
73	24605674	SPRING
74	24609011	SPECIAL SCREW M2.6×1.6
75	24605675	SPRING
76	24602525	REEL AS
77	24611334	REFLECTOR (5P)
79	24611397A	HOLDER (CASSETTE)
80	24606288	PHOT REFLECTOR NJL5161KF1
81	24605751	SPRING (L)
82	24605744	SPRING
83	24603355	LEVER
84	24603356	EJECT LEVER (L)
85	24611461	WASHER 5×2.6×0.5
86	24606435	LEAD WIRE AS L470
87	24606436	LEAD WIRE AS L420
88	24606437	LEAD WIRE AS L230
89	24609436	PAN HEAD SCREW
90	24609037	PAN HEAD SCREW M2.6×28
92	24602526A	IDLER GEAR
93	24602527	GEAR
94	24611462	PLATE AS (GND)
96	833126057	TAP-TIGHT SCREW M2.6+5
97	24605679A	SPRING (R)
98	24605678A	SPRING
99	24603383	BRAKE LEVER AS (L)
100	24603384	BRAKE LEVER AS (R)
101	24603352	EJECT LEVER
109	24603385	LEVER (B)
110	24609035	TAP-TIGHT SCREW M2×2.6
111	24603386	LEVER AS
112	24611463	BACK PLATE (CASSETTE)
116	24605746	SPRING
120	24601255	ASSIST MOTOR AS
122	24611442	HOLDER (MOTOR)
123	24611443	OIL CUTTER
124	24609038	SCREW M1.6
125	24609039	PAN HEAD SCREW M2×2.5

TAPE MECHANISM-EXPLODED VIEW



ADJUSTMENT PROCEDURES

PRECAUTIONS

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

TEST EQUIPMENT/TOOLS REQUIRED:

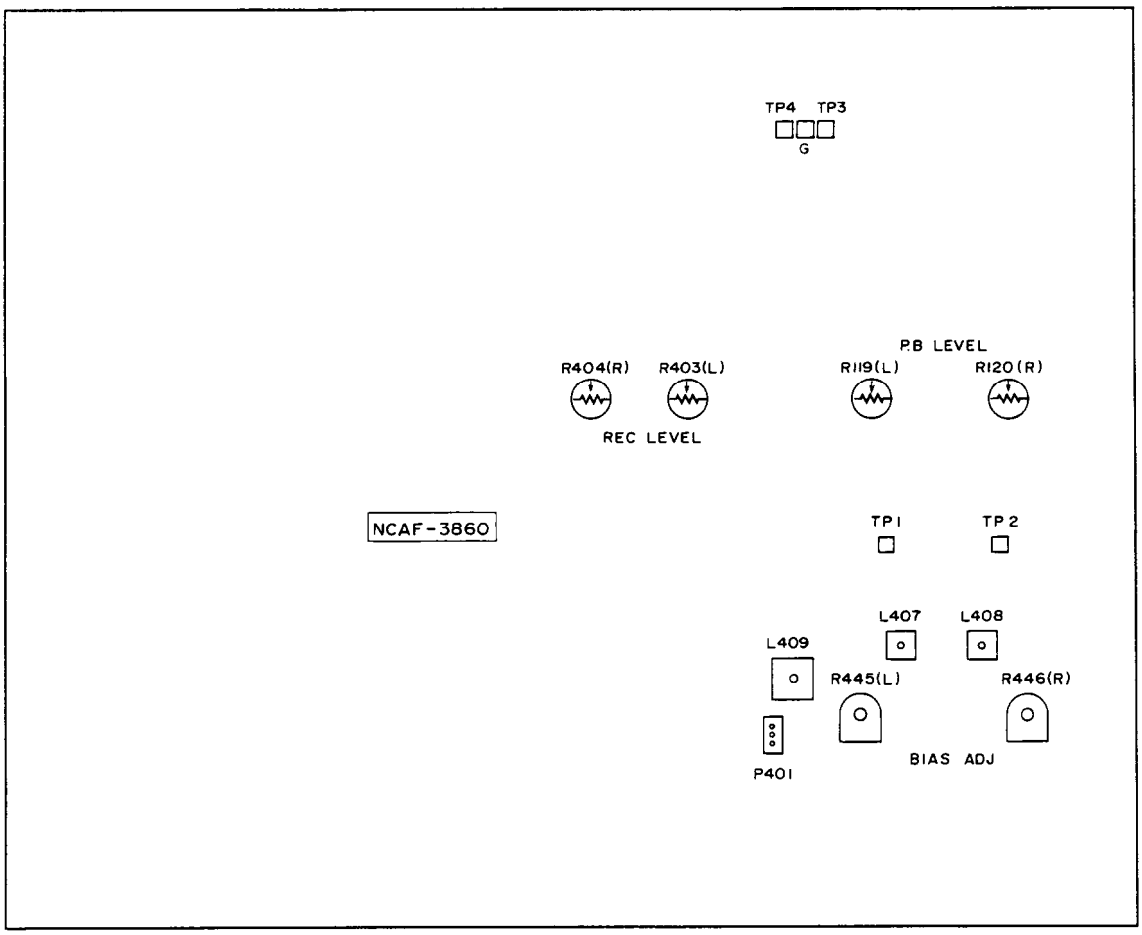
Audio oscillator
Digital frequency counter
Oscilloscope
Attenuator
AC voltmeter
Non-magnetic screw driver
Test tapes
VTT-703L : 10 KHz, −10dB
MTT-111 : 3 kHz, −10dB
MTT-150 : Dolby level calibration 400Hz, tone 200nWb/m

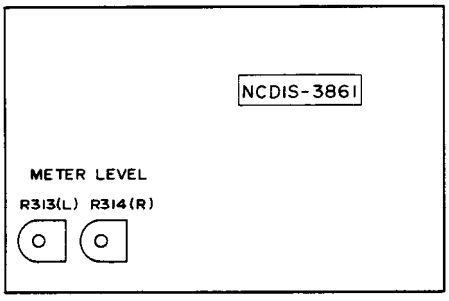
Item		Connection of instrument	Line input	Test tape	Mode	Output Indicator	Adjustment point	Adjust	Remarks
1	Tape speed	Frequency counter to Line output terminal		MTT-111	PB	Frequency counter	Semi-fixed on the moter	3010±10Hz	
2	Head azimuth	AC voltmeter and oscilloscope to Line output terminal		VTT-703L	PB	AC voltmeter	Head azimuth screw	Maximum and same phase at channels L and R	
3	Playback level	AC voltmeter to terminals TP-3 and TP-4		MTT-150	PB	AC voltmeter	R119 (Ch. L) R120 (Ch. R)	388mV	
4	Meter level			MTT-150	PB	Level meter	R313 (Ch. L) R314 (Ch. R)	0db	
5	OSC Block	Frequency counter to P401A read loose coupling		METAL TAPE MX-C90	REC	Frequency counter	L-409	85kHz±2kHz	
6	HX-PRO	AC voltmeter to terminals TP-1 and TP-2		METAL TAPE	REC	AC voltmeter	L-407 (Ch. L) L-408 (Ch. R)	Maximum	R-445 R-446 clockwise
7	Bias current		1kHz, −20dB and 12kHz, −12dB	XL-II C-90	REC/PB	AC voltmeter	R445 (Ch. L) R446 (Ch. R)	Same level at REC/PB	Input VR maximum
8	Record level		1kHz	XL-II C-90	REC	AC voltmeter	Attenutor or AF OSC output	350mV	
					REC/PB	AC voltmeter	R403 (Ch. L) R404 (Ch. R)	Same level at REC/PB	

Blank tape
NORMAL UD-1 C-90
HIGH .....XL-II C-90
METAL .....MX C-90

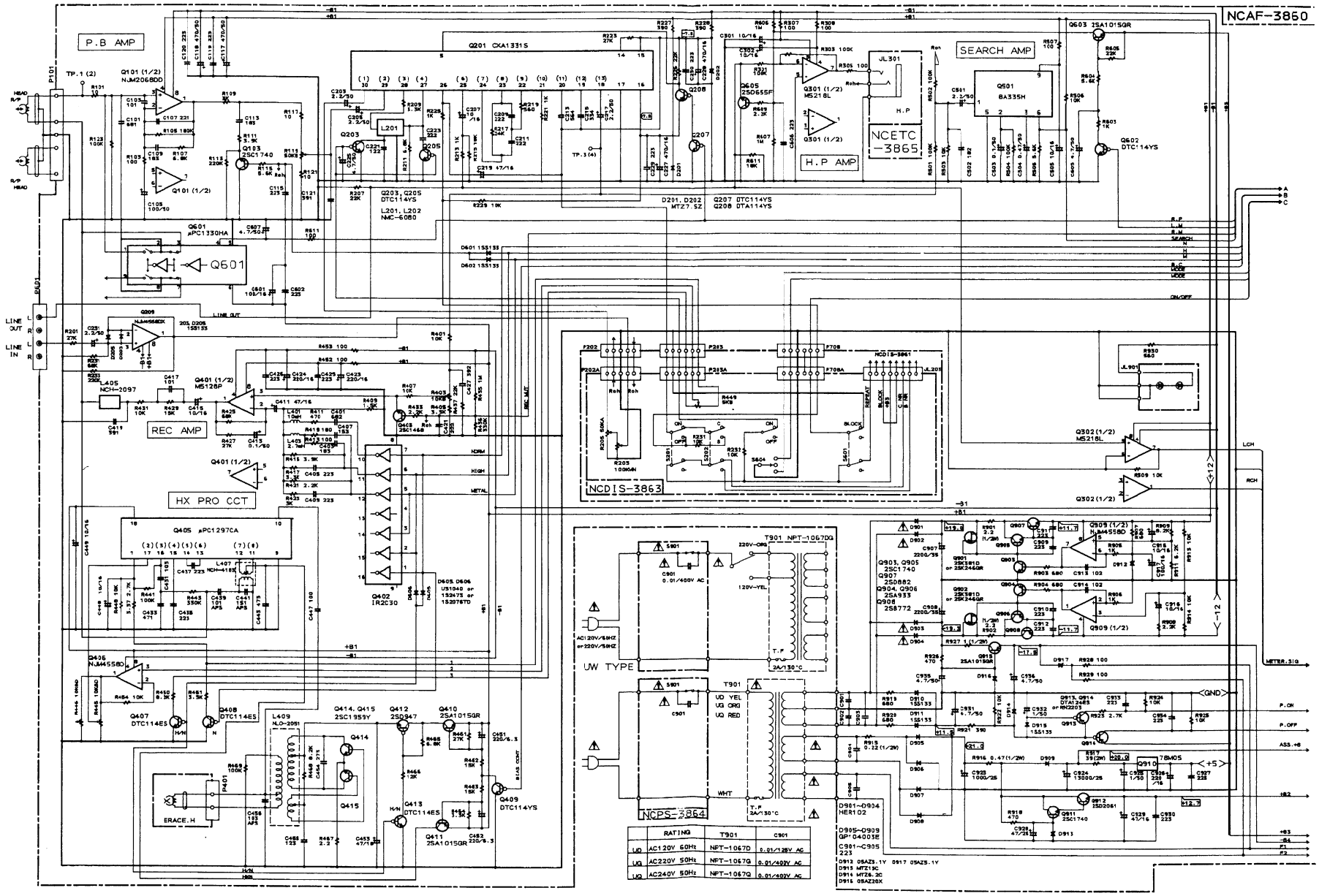
PLAY torque .....30~60g/cm
FF. REW torque .....70~160g/cm
Back tension .....2~7g/cm

ADJUSTMENT POINT





SCHEMATIC DIAGRAM 1/2



SCHEMATIC DIAGRAM 2/2