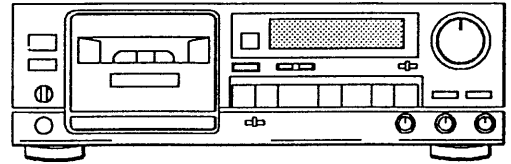


AIWA®**AD-F810**

SERVICE MANUAL



STEREO CASSETTE DECK

• BASIC TAPE MECHANISM : $\alpha - 12$

• TYPE. H,U,C,E,K

SPECIFICATIONS

Type Stereo cassette tape deck**Track format**

4 tracks, 2 channels

Power supply

AD-F810 E

AC 220V, 50Hz

AD-F810 K

AC 240V, 50Hz

AD-F810 H, U, C

AC 120/220/240V switchable, 50/
60Hz**Power consumption**

AD-F810H 18W

AD-F810U, C, E, K 25W

Frequency response

Metal tape: 15 - 20,000Hz

CrO₂ tape: 15 - 19,000Hz

Normal tape: 15 - 18,000Hz

Signal-to-noise ratio80 dB (METAL tape DOLBY C NR
ON above 5kHz)**Wow and flutter**

0.065% (according to DIN 45500)

0.035% (WRMS)

Tape speed4.8 cm/sec. (1⁻⁷/₈ ips)**Recording system**

AC bias (frequency 105kHz)

Erase system AC erase**Motor** DC servomotor × 1

DC motor × 1

Heads Playback head × 1 (PC-OCC coil
super DX head)Recording head × 1 (PC-OCC coil
super DX head)Erase head × 1 (Double-gap
sendust head)**Inputs** REC/LINE IN, maximum input
sensitivity: 50mV (47k Ω)**Outputs**PLAY/LINE OUT standard output
level: 370mV (0VU); suitable loadimpedance: over 47k Ω


PHONES: 0.8mW (0VU)

suitable load impedance: 32 Ω **Dimensions**

430(W) × 140(H) × 318.3(D) mm

17 × 5⁻⁵/₈ × 12⁻⁵/₈ inches**Weight** 4.9 kg

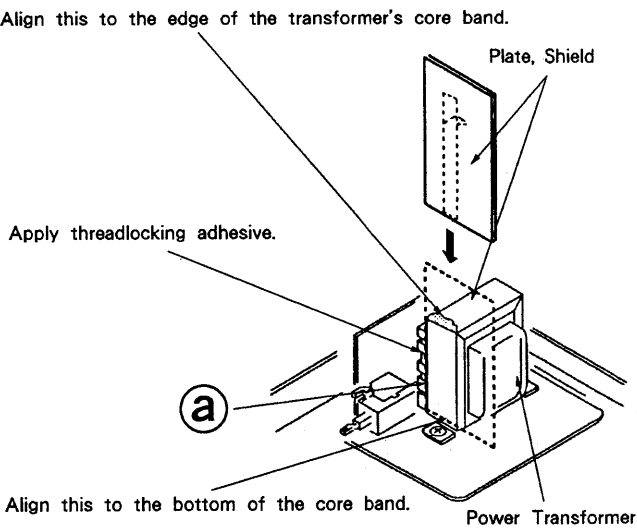
10.8 lbs

• Design and specifications are subject to change without
notice.• Dolby noise reduction and HX Pro headroom extension
manufactured under license from Dolby Laboratories
Licensing Corporation. HX Pro originated by Bang &
Olufsen.• "DOLBY", the double-D symbol  and "HX PRO" are
trademarks of Dolby Laboratories Licensing Corporation.**AIWA Co., Ltd.****Tokyo Japan**

Printed in Japan

DISASSEMBLY INSTRUCTIONS

1. Notes on replacing the "Power Transformer".
- When replacing the "Power Transformer", attach a "Plate, Shield" to the specified position to conform to the safety standard (spacing).
- 1) Attach the shield plate with adhesive tape while aligning it to portion ③. At this time, apply a threadlocking adhesive to it.



■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q.TY
	1	★81-DS2-902-010	INSTRUCTION BOOKLET, EX (J)	※	1
	2	★81-DS2-640-010	REMOTE UNIT, C - ASSY RC - S104 (U,C)	※	1
	3	★87-009-724-010	PLUG, ADAPTOR IR39 (H)		1
	4	★87-034-786-019	CORD, PIN 189 - 0760		2

ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
===IC===		
	87-001-533-010	IC, GP1U501 (REMOTE SENSOR) (U, C)
	87-002-565-010	IC, HA12142NT-01
	87-002-394-010	IC, LB1641
	81-DS2-613-010	IC, LC6554H-4694
	87-002-328-010	IC, M5218AL
	87-020-758-010	IC, NJM2068SD
	87-020-908-010	IC, NJU4066BD
	87-027-827-010	IC, TC4069UBP

===TRANSISTOR===

89-112-965-010	TRANSISTOR, 2SA1296GR
89-109-521-010	TRANSISTOR, 2SA952K
89-213-302-019	TRANSISTOR, 2SB1330
89-213-542-019	TRANSISTOR, 2SB1354EF
89-213-702-019	TRANSISTOR, 2SB1370E
87-026-462-010	TRANSISTOR, 2SC1740S (RS)
89-318-156-010	TRANSISTOR, 2SC1815BL
89-318-155-010	TRANSISTOR, 2SC1815GR
89-320-011-010	TRANSISTOR, 2SC2001K
87-026-219-019	TRANSISTOR, DTA144ES
87-026-514-019	TRANSISTOR, DTC123YS
87-026-218-019	TRANSISTOR, DTC144ES

===DIODE===

87-001-783-019	DIODE, 1N4002-T
87-020-465-019	DIODE, 1SS133
87-020-123-010	DIODE, 6S446
87-027-301-010	DIODE, ZENER HZ3A1
87-027-416-010	DIODE, ZENER HZ3C2
87-027-286-010	DIODE, ZENER HZ5C1
87-001-916-010	DIODE, ZENER UTZJ10B
87-001-917-010	DIODE, ZENER UTZJ12C
87-001-918-010	DIODE, ZENER UTZJ22B
87-001-911-010	DIODE, ZENER UTZJ4. 7A
87-001-914-010	DIODE, ZENER UTZJ6. 2B

===MAIN CIRCUIT BOARD SECTION===

C101	★87-018-125-010	CAP, CERA-SOL SS 330P-50 B
C102	★87-018-125-010	CAP, CERA-SOL SS 330P-50 B
C109	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C110	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C111	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C113	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C114	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C115	★87-018-197-010	CAP, CERA-SOL SS 1800P-16 X
C116	★87-018-197-010	CAP, CERA-SOL SS 1800P-16 X
C123	★87-010-544-010	CAP, ELECT 0.1-50
C124	★87-010-544-010	CAP, ELECT 0.1-50
C125	★87-010-544-010	CAP, ELECT 0.1-50
C126	★87-010-544-010	CAP, ELECT 0.1-50
C127	★87-010-979-010	CAP, ELECT 2.2-50 BP ES
C128	★87-010-979-010	CAP, ELECT 2.2-50 BP ES
C129	★87-010-401-010	CAP, ELECT 1-50 SME
C201	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C202	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C203	★87-018-132-010	CAP, CERA-SOL SS 2200P-16 X
C204	★87-018-132-010	CAP, CERA-SOL SS 2200P-16 X
C207	★87-010-677-010	CAP, ELECT 0.15-50 7L
C208	★87-010-677-010	CAP, ELECT 0.15-50 7L
C209	★87-018-132-010	CAP, CERA-SOL SS 2200P-16 X
C210	★87-018-132-010	CAP, CERA-SOL SS 2200P-16 X
C227	★87-010-544-010	CAP, ELECT 0.1-50
C228	★87-010-544-010	CAP, ELECT 0.1-50
C229	★87-010-544-010	CAP, ELECT 0.1-50
C230	★87-010-544-010	CAP, ELECT 0.1-50
C231	★87-010-404-010	CAP, ELECT 4.7-50 SME
C232	★87-010-404-010	CAP, ELECT 4.7-50 SME

REF. NO.	PART NO.	DESCRIPTION
C233	★87-010-401-010	CAP, ELECT 1-50 SME
C234	★87-010-248-010	CAP, ELECT 220-10 SME
C237	★87-015-951-010	CAP, ELECT 1-50 LL
C238	★87-015-951-010	CAP, ELECT 1-50 LL
C239	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C240	★87-010-248-010	CAP, ELECT 220-10 SME
C241	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C242	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C243	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C244	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C245	★87-010-405-010	CAP, ELECT 10-50 SME
C246	★87-010-405-010	CAP, ELECT 10-50 SME
C301	★87-018-123-010	CAP, CERA-SOL SS 220P-50 B
C302	★87-018-123-010	CAP, CERA-SOL SS 220P-50 B
C305	★87-018-128-010	CAP, CERA-SOL SS 560P-50 B
C306	★87-018-128-010	CAP, CERA-SOL SS 560P-50 B
C307	★87-018-131-010	CAP, CERA-SOL SS 1000P-50 B
C308	★87-018-131-010	CAP, CERA-SOL SS 1000P-50 B
C311	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C312	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C317	★87-010-370-010	CAP, ELECT 330-6.3 SME
C318	★87-010-101-010	CAP, ELECT 220-16 SME
C319	★87-014-077-010	CAP, PP 6800P-100 J
C324	★87-010-382-010	CAP, ELECT 22-25 SME
C325	★87-010-401-010	CAP, ELECT 1-50 SME
C326	★87-010-401-010	CAP, ELECT 1-50 SME
C327	★87-014-073-010	CAP, PP 4700P-100 J
C328	★87-014-073-010	CAP, PP 4700P-100 J
C329	★87-010-405-010	CAP, ELECT 10-50 SME
C401	★87-010-389-010	CAP, ELECT 2200-25 SME
C402	★87-010-389-010	CAP, ELECT 2200-25 SME
C403	★87-010-247-010	CAP, ELECT 100-50 SME
C404	★87-010-382-010	CAP, ELECT 22-25 SME
C405	★87-010-263-010	CAP, ELECT 100-10
C406	★87-010-644-010	CAP, ELECT 470-16 MUSE
C407	★87-010-235-010	CAP, ELECT 470-16 SME
C408	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C410	★87-010-405-010	CAP, ELECT 10-50 SME
C501	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C502	★87-018-132-010	CAP, CERA-SOL SS 2200P-16 X
C503	★87-018-100-010	CAP, CERA-SOL SS 4.7P-50 SL
C504	★87-018-119-010	CAP, CERA-SOL SS 100P-50 B
C505	★87-010-401-010	CAP, ELECT 1-50 SME
C506	★87-010-382-010	CAP, ELECT 22-25 SME
C601	★87-010-263-010	CAP, ELECT 100-10
C602	★87-010-382-010	CAP, ELECT 22-25 SME
C603	★87-010-404-010	CAP, ELECT 4.7-50 SME
C604	★87-010-404-010	CAP, ELECT 4.7-50 SME
C605	★87-010-546-010	CAP, ELECT 0.33-50 SME
C606	★87-010-546-010	CAP, ELECT 0.33-50 SME
C701	★87-010-404-010	CAP, ELECT 4.7-50 SME
C702	★87-010-404-010	CAP, ELECT 4.7-50 SME
L101	★82-231-629-010	COIL, 22MMH-J
L102	★82-231-629-010	COIL, 22MMH-J
L201	★82-231-622-010	COIL, 22MMH-J
L202	★82-231-622-010	COIL, 22MMH-J
L203	★87-003-131-010	COIL, 10MMH-J
L204	★87-003-131-010	COIL, 10MMH-J
L205	★80-DW1-623-010	FILTER, DOLBY 108K
L206	★80-DW1-623-010	FILTER, DOLBY 108K
L301	★81-DS2-630-010	COIL, HX 108K
L302	★81-DS2-630-010	COIL, HX 108K
L303	★81-DS2-629-010	COIL, BIAS 108K
SFR101	★87-024-168-010	SFR, 1K DIA6 V
SFR102	★87-024-168-010	SFR, 1K DIA6 V
SFR201	★87-024-172-010	SFR, 10K DIA6 V
SFR202	★87-024-172-010	SFR, 10K DIA6 V
SFR301	★87-024-176-010	SFR, 100K DIA6 V

REF. NO.	PART NO.	DESCRIPTION
SFR302	★87-024-176-010	SFR, 100K DIA6 V
VR201	81-DS2-615-010	VOLUME 5KBX2(REC SENSITIVITY)
VR301	81-DS2-616-010	VOLUME 10KB(BIAS FINE)
VR701	81-DS2-614-010	VOLUME 150KW(REC BALANCE)

===FRONT CIRCUIT BOARD SECTION===

C901	★87-010-405-010	CAP, ELECT 10-50 SME
C902	★87-010-370-010	CAP, ELECT 330-6.3 SME
C903	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C904	★87-010-402-010	CAP, ELECT 2.2-50 SME
C905	★87-010-382-010	CAP, ELECT 22-25 SME
C906	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C907	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C908	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
CF901	★87-030-167-010	CERAMIC RESONATOR CST4.0MHZ
D940	81-DS2-637-010	LED, SEL-1121R TP7(REC ●)
D941	81-DS2-639-010	LED, SEL-1321G TP7(▶)
D942	81-DS2-638-010	LED, SEL-1721Y TP7(■)
D943	81-DS2-637-010	LED, SEL-1121R TP7(REC MUTE ●)
FL901	81-DS2-612-010	FL BG-9616K(FL DISPLAY)
R914	87-025-471-010	RES, NF 4.7-1/4W J
S901	87-036-215-010	TACT SW(REC ●)
S902	87-036-215-010	TACT SW(MS/REVIEW ◀)
S903	87-036-215-010	TACT SW(▶)
S904	87-036-215-010	TACT SW(MS/CUE ▶▶)
S905	87-036-215-010	TACT SW(COUNTER RESET)
S906	87-036-215-010	TACT SW(ZERO RETURN)
S907	87-036-215-010	TACT SW(■)
S908	87-036-215-010	TACT SW(■)
S909	87-036-215-010	TACT SW(REC MUTE ●)
S910	87-036-215-010	TACT SW(DISPLAY MODE)
S912	81-DS2-619-010	SLIDE SW(DOLBY NR)
S913	81-DS2-618-010	SLIDE SW(TIMER)
S914	87-036-215-010	TACT SW(MONITOR)
S915	87-036-215-010	TACT SW(MPX FILTER)
VR901	84-794-621-010	VOLUME 50KA R-VR(REC LEVEL)

===HEADPHONE CIRCUIT BOARD SECTION===

C801	★87-010-546-010	CAP, ELECT 0.33-50 SME
C802	★87-010-546-010	CAP, ELECT 0.33-50 SME
C803	★87-010-263-010	CAP, ELECT 100-10
C804	★87-010-263-010	CAP, ELECT 100-10
C805	★87-010-384-010	CAP, ELECT 100-25 SME
C806	★87-010-263-010	CAP, ELECT 100-10
C807	★87-018-134-010	CAP, CERA-SOL SS 0.01-16 Y
C809	★87-018-131-010	CAP, CERA-SOL SS 1000P-50 B
C810	★87-018-131-010	CAP, CERA-SOL SS 1000P-50 B
J801	★87-009-355-010	JACK, 6.3 GLD HLJ1520 (PHONES)
VR801	81-DS2-617-010	VOLUME 10KAX2 (PHONE LEVEL)

===POWER CIRCUIT BOARD SECTION===

△C412	★87-019-113-010	SPARK KILLER 0.0022E
△PT401	81-DS2-623-019	POWER TRANSFORMER HU(H, U, C)
△PT401	81-DS2-621-019	POWER TRANSFORMER E(E)
△PT401	81-DS2-622-019	POWER TRANSFORMER K(K)
△S401	87-036-015-010	AC SW SDDL1(POWER)

===JACK CIRCUIT BOARD SECTION===

J701	★87-009-023-010	JACK, PIN YKC21-0349 (PLAY/LINE OUT) (REC/LINE IN)
------	-----------------	---

===SWITCH CIRCUIT BOARD SECTION===

△S402	87-036-202-010	ROTARY SW 1-1-3 H(AC VOLTAGE) (H, U, C)
-------	----------------	--

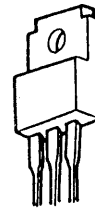
===MECHA CIRCUIT BOARD SECTION===

M1	87-045-301-010	MOTOR, MMN-6F1LBOK (REEL)
PH1	★87-001-365-010	PHOTO SENSOR, SPI315-05-C

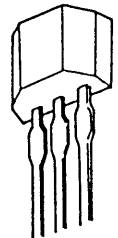
REF. NO.	PART NO.	DESCRIPTION
PH2	★87-001-365-010	PHOTO SENSOR, SPI315-05-C
S1	81-505-607-010	LEAF SW(Cr02 DET)
S2	81-505-607-010	LEAF SW(METAL DET)
S3	81-505-607-010	LEAF SW(CASSETTE)
S4	81-505-607-010	LEAF SW(REC-EN)
S5	81-505-601-010	LEAF SW, GEAR CAM(PAUSE)
S6	81-505-601-010	LEAF SW, GEAR CAM(PLAY)
SOL1	81-507-237-010	SOLENOID 9ME-C(F/R)
SOL2	81-507-237-010	SOLENOID 9ME-C(PLAY)
===MISCELLANEOUS===		
△	★87-034-749-019	AC CORD <H> W/PLUG(H)
△	★87-034-583-019	AC CORD ASSY U(U, C)
△	★82-187-797-019	AC CORD<E>(E)
△	★82-187-796-019	AC CORD K(K)
△	★87-085-184-010	BUSHING, AC CORD D(H, U, C)
△	★87-085-185-010	BUSHING, AC CORD E(E, K)
CON101	★81-DS2-627-019	CONNECTOR, 4P PB
CON301	★81-DS2-628-019	CONNECTOR, 6P REC
EH	★87-046-359-010	HEAD, EH H3311
FT901	81-DS2-635-010	CABLE, FFC 20P
FT903	81-VP1-643-010	FLAT CABLE, 15-1.25 140
LED1	87-020-109-010	LED, SLF-201C(CASSETTE BACK LIGHT)
M2	87-045-296-010	MOTOR, EG 530AD-2B(MAIN)
RPH	87-046-361-010	HEAD, RPH H2381



E C B



B C E



E C B

2SA952

2SB1370

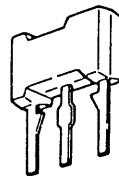
2SC1740

2SA1296

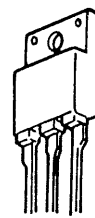
DTA144

2SC1815

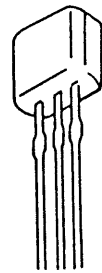
2SC2001



E C B



B C E



E C B

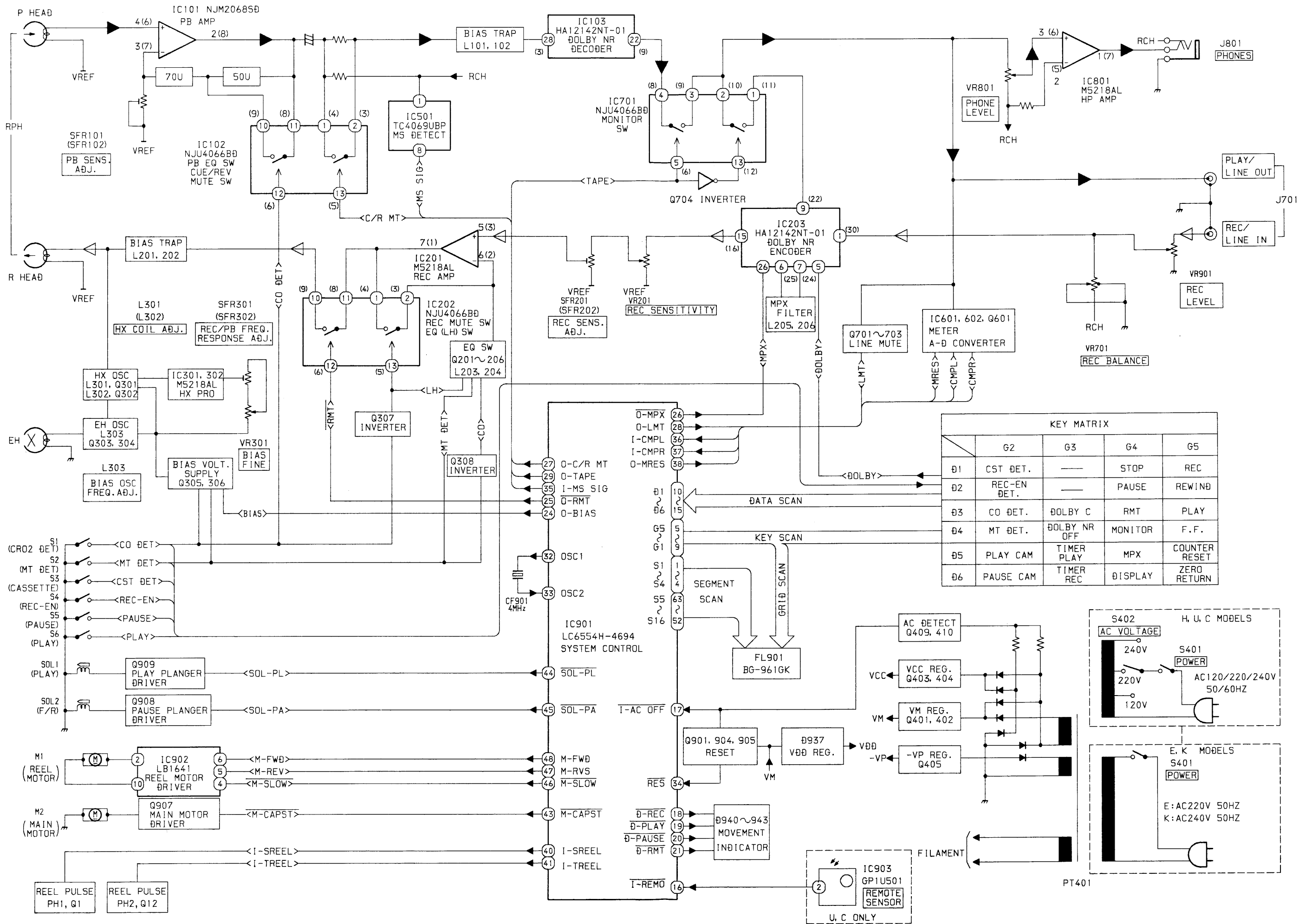
2SB1330

2SB1354

DTC144

DTC123

BLOCK DIAGRAM



IC DESCRIPTION

IC,LC6554H – 4694

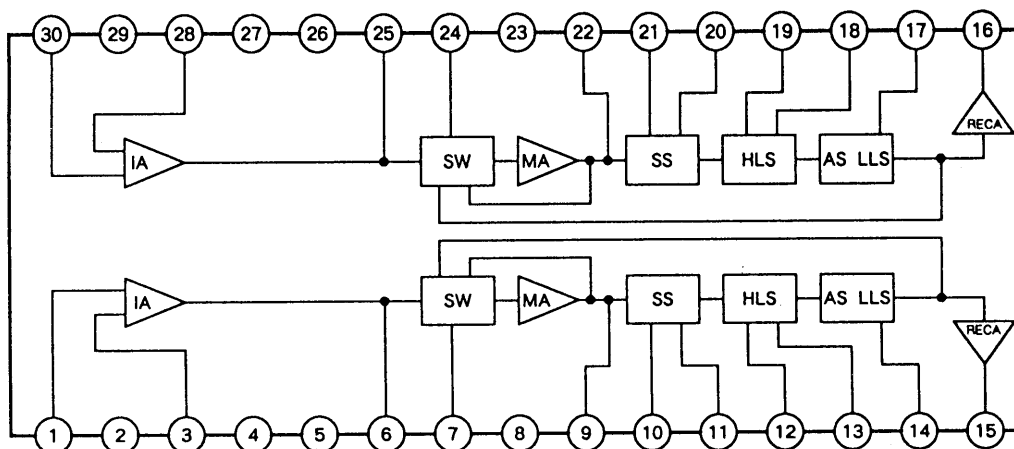
Pin No.	Pin Name	I/O	Description
1 } 4	S 4 } S 1	O	FL lighting segment output.
5 } 9	G 5 } G 1	O	FL lighting grid output and KEY SCAN output.
10 } 15	D 1 } D 6	I	KEY SCAN input.
16	$\overline{I-REMO}$	I	Remote control input.
17	$\overline{I-AC\ OFF}$	I	AC OFF detection.
18	$\overline{D-REC}$	O	REC LED output. "L" when REC mode.
19	$\overline{D-PLAY}$	O	PLAY-LED output. "L" when PLAY mode.
20	$\overline{D-PAUSE}$	O	PAUSE LED output. "L" when PAUSE.
21	$\overline{D-RMT}$	O	REC MUTE LED output. "L" when REC MUTE.
22	O-CAL	O	Not used.
23	O-HX	O	
24	O-BIAS	O	BIAS OSC control output. "H" when REC mode.
25	$\overline{O-RMT}$	O	REC MUTE control output. "H" when REC-PLAY.
26	$\overline{O-MPX}$	O	DOLBY IC MPX control output. "L" when MPX ON.
27	$\overline{O-C/R\ MT}$	O	CUE/REVIEW MUTE control output. "H" when PLAY.
28	O-LMT	O	LINE MUTE control output. LINE MUTE when "H".
29	O-TAPE	O	TAPE/SOURCE control output of MONITOR. "H" when TAPE MONITOR.
30	TEST	—	Terminal for the system test. Connect to GND.
31	VSS	—	Connect to GND.
32	OSC 1	O	Microcomputer clock output.
33	OSC 2	I	Microcomputer clock input.
34	\overline{RES}	I	System reset terminal.
35	I-MS. SIG	I	MS control input.
36	I-CMPL	I	METER Lch control input.
37	I-CMPR	I	METER Rch control input.
38	O-MRES	O	METER AD converter control output.
39	O-DIRECT	O	Not used.
40	I-1DS2	O	Control input for switching programs. AD-F810 when "H".
41	I-TREEL	I	TAKE UP REEL PULSE input and automatic stop detection input for the linear counter.
42	I-SREEL	I	SUPPLY REEL PULSE input for the linear counter.
43	$\overline{M-CAPST}$	O	Capstan motor control output.
44	$\overline{SOL-PL}$	O	PLAY plunger control output.
45	$\overline{SOL-PA}$	O	PAUSE plunger control output.

Pin No.	Pin Name	I/O	Description
46	$\overline{M-SLOW}$	O	Reel motor voltage control output.
47	M-RVS	O	Reel motor control output.
48	M-FWD	O	
49	M-REEL	O	Not used.
50	$\overline{O-SCALE}$	O	
51	VP	—	Load power supply for the pull down resistor. Connect to -VP.
52	S16	O	FL lighting segment output.
63	S5		
64	VDD	—	System power supply terminal. Connect to +5 V.

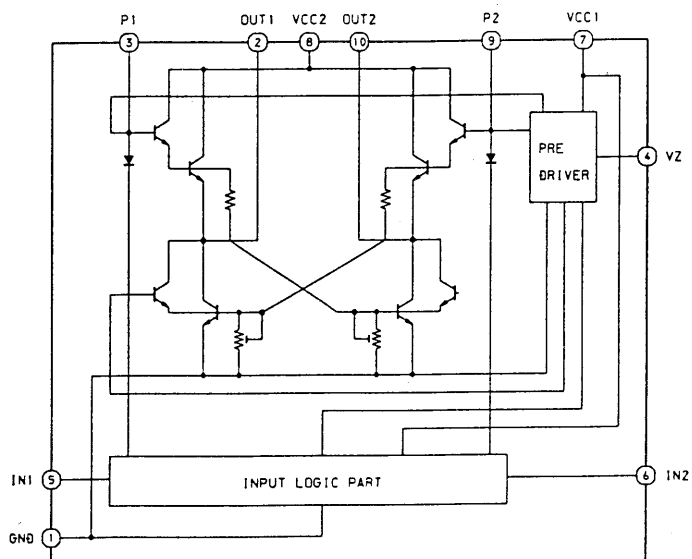
PU indicates that the pull up resistor is built in, and PD indicates that the pull down resistor is built in.
PIN No. 22-25 output "L" when the system is initialized.

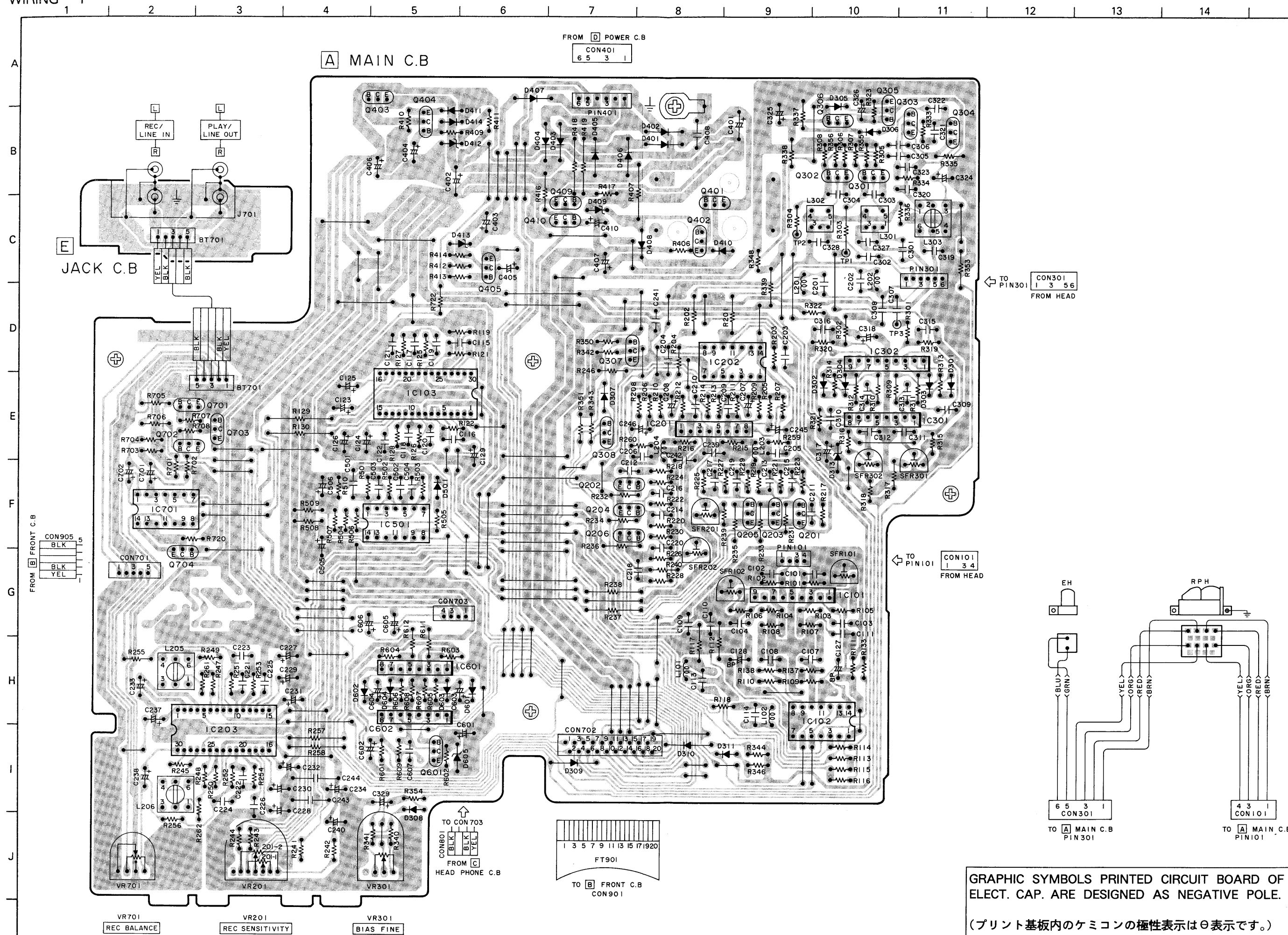
IC BLOCK DIAGRAM

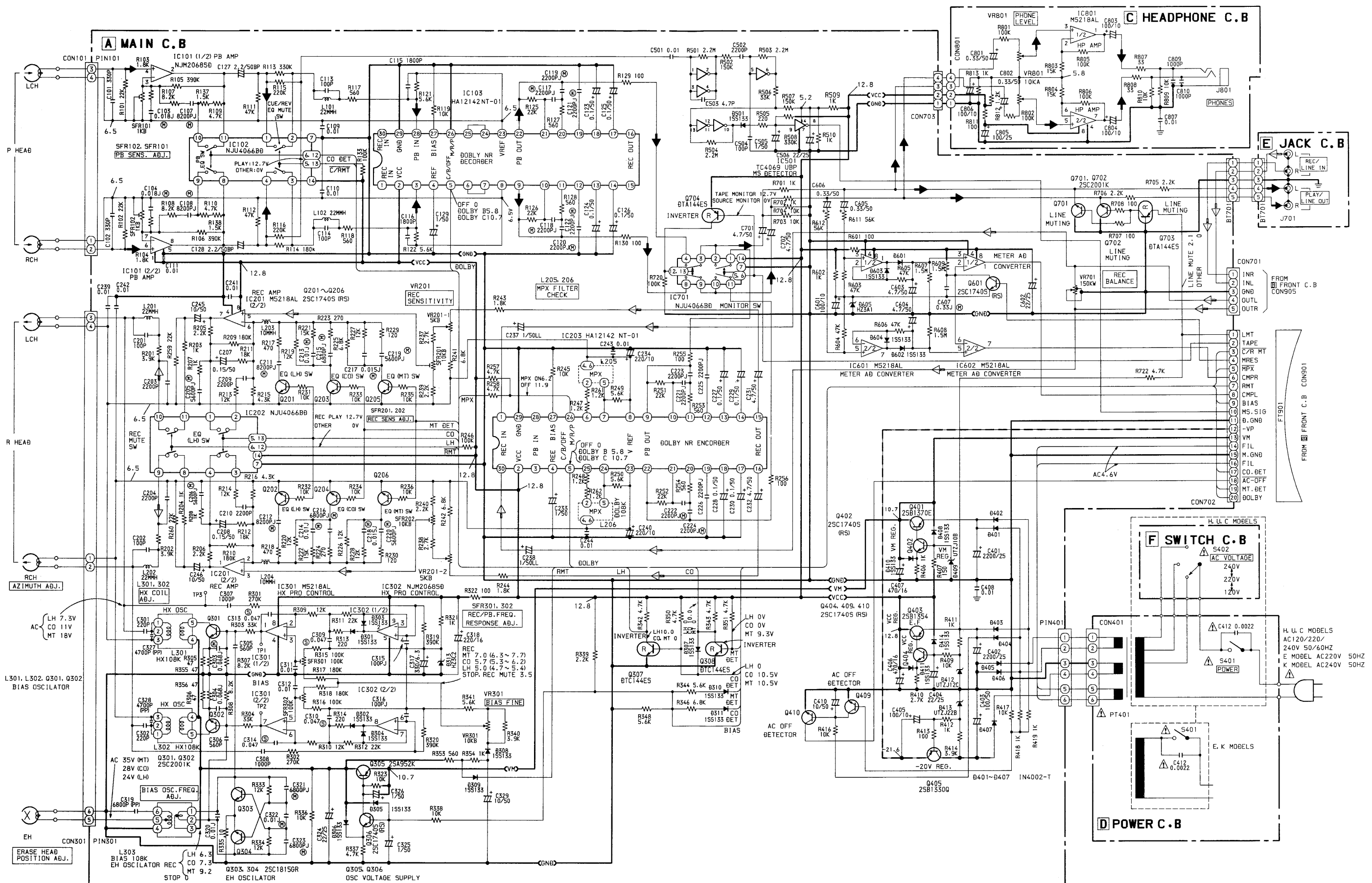
IC, HA12142NT



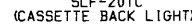
IC, LB1641



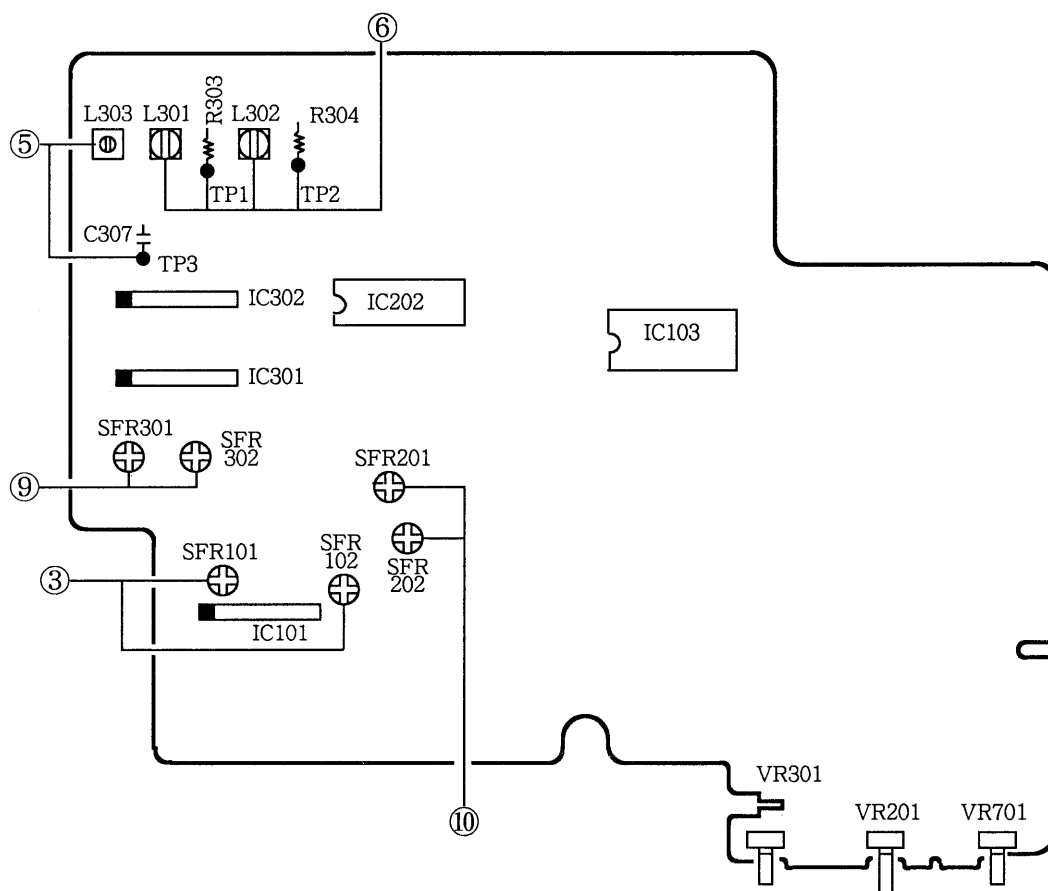
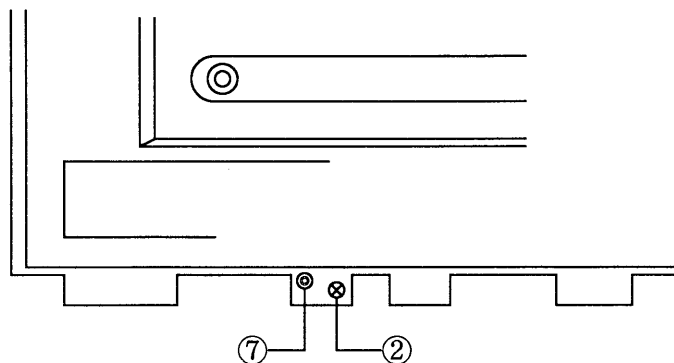
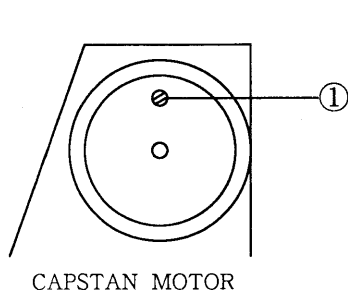








ADJUSTMENT



Initial Settings

1. REC BALANCE : Mechanical center
2. BIAS FINE : Center click position
3. REC SENS : Center click position
4. MPX FILTER SW : THRU (OFF)
5. DOLBY NR SW : OFF

1. Tape Speed Adjustment

- Settings :
- Test tape : TTA-100 (TTA-111S)
 - Test point : LINE OUT jack
 - Adjustment location : SFR (M2)

Method : Play back the test tape and adjust so that the frequency counter reads 3000Hz.

2. Azimuth Adjustment

- Settings :
- Test tape : TTA-310 (TTA-317E, SCC-1429)
 - Test point : LINE OUT jack
 - Adjustment location : Azimuth adjustment screw

Method : Play the 10kHz signal of the test tape and adjust so that the output is maximum and the waveforms in the Lissajous figure are in phase.

3. Playback Sensitivity Adjustment

- Settings :
- Test tape : TTA-200 (TTA-161, TCC-130)
 - Test point : LINE OUT jack
 - LEVEL meter : DOLBY NR mark
 - Adjustment location : SFR101 (L ch)
SFR102 (R ch)

Method : Play back the test tape and adjust so that the output level is $560\text{mV} \pm 10\text{mV}$.

4. Playback Frequency Response Check

Settings : • Test tape : TTA-310 (TTA-317E, SCC-1429)
• Test point : LINE OUT jack

Method : Play back the 1kHz and 10kHz signals of the test tape and check that the output of the 10kHz signal is $0\text{dB} \pm 2\text{dB}$ with respect to that of the 1kHz signal.

5. Bias OSC. Frequency Adjustment

Settings : • Test tape : TTA-620 (TTA-119MP)
• Test points : TP3
• Adjustment location : L303

Method : Set to the record mode and adjust so that frequency counter reads $108\text{kHz} \pm 1\text{kHz}$.

6. HX Coil Adjustment

Settings : • Test tape : TTA-620 (TTA-119MP)
• Test point : TP1, TP2
• Adjustment location : L301 (L ch)
L302 (R ch)

Method : Adjust L301, L302 so that the DC voltage at the test points is in the REC STANDBY mode.

7. Erase Head Position Adjustment

Settings : • Test tape : TTA-620 (TTA-119MP)
TTA-600 (TTA-119K)
• Test point : LINE OUT jack
• Adjustment location : Hexagonal nut of erase head
• 0VU : 510mV

Method : Record a 125Hz +10VU signal on a test tape TTA-620 (TTA-119MP) using this unit. Rewind the recorded section and erase. Turn the hexagonal nut clockwise gradually until the Rch play back output decreases approx. 10dB. Then stop erasing and turn the hexagonal nut three fourths turn (270-300 degrees) counterclockwise. Rewind the erased section and play back the erased section. Check that the Rch play back output decreases more than 60dB.
[Over-erase check]

Record a 10kHz -10VU signal on a test tape TTA-600 (TTA-119K) using this unit and let the Rch output be the reference output. Turn over the tape without rewinding, and erase (same time as recorded time). Turn over the tape without rewinding again, play back the recorded section. Check that the difference between the Rch play back output and reference output is within -0.8dB .

* The test tapes used for checking should be erased. After checking, fast forward the test tapes.

8. MPX Filter Check

Settings : • Test point : LINE OUT jack
• Input signal : 19kHz signal (0VU) at input
• MPX SW : ON

Method : Set to the record mode and check that the output DOLBY NR SW ON becomes up to -30dB for the output at DOLBY NR SW OFF.

9. Recording/Playback Frequency Response Adjustment

Settings : • Test tape : NORM. • TTA-600 (TTA-119K)
CrO₂ • TTA-610 (TTA-119H)
METAL • TTA-620
(TTA-119MP)

• Test point : LINE OUT jack
• Input signal : 1kHz/10kHz (LINE IN)
• Adjustment locations : SFR301 (L ch)
SFR302 (R ch)

Method : Apply a 1kHz signal and adjust the attenuator so that the output level at the LINE OUT jack is 40mV. Record and play back the 1kHz and 10kHz signals and adjust so that the output of the 10kHz signal is $0 \pm 0.3\text{dB}$ (NORM.), $0 \pm 1\text{dB}$ (CrO₂, METAL) with respect to that of the 1kHz signal.

10. Recording Sensitivity Adjustment

Settings : • Test tape : NORM. • TTA-600 (TTA-119K)
CrO₂ • TTA-610 (TTA-119H)
METAL • TTA-620
(TTA-119MP)

• Input signal : 1kHz (LINE IN)
• Test point : LINE OUT jack
• Adjustment locations : SFR201 (L ch)
SFR202 (R ch)

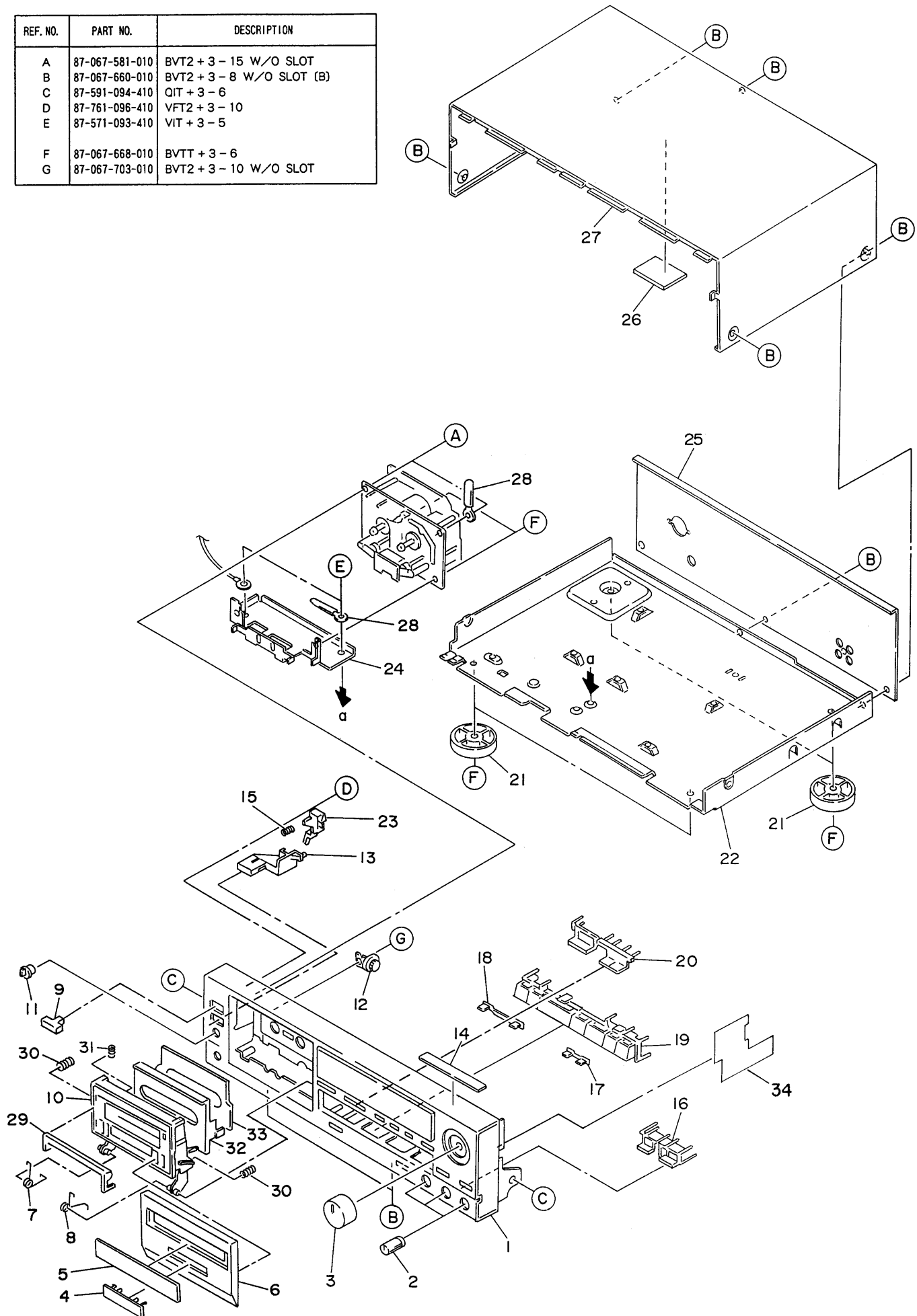
Method : Apply a 1kHz signal and adjust the attenuator so that the output level at the LINE OUT jack is 50mV. Record and playback the 1kHz signal and adjust so that the output is $0 \pm 0.2\text{dB}$ (NORM.), $0 \pm 1\text{dB}$ (CrO₂, METAL).

PRACTICAL SERVICE FIGURE

Playback output :	560 ± 50mV (LINE OUT)
REC/PB output :	0VU ± 1dB (LINE OUT)
REC/PB distortion :	Less than 1.8 % (MT, TTA-620, CrO ₂ , TTA-610, NORM., TTA-600)
Playback noise : (LINEAR)	Less than 1.1mV (MT, CrO ₂) (DOLBY NR C ON) Less than 3.0mV (NORM.) (DOLBY NR OFF)
REC/PB noise : (LINEAR)	MT, CrO ₂ : Less than 2.6/1.4/1.1mV (DOLBY OFF/B/C) NORM : Less than 3.2/1.6/1.2mV (DOLBY OFF/B/C)
Erase Ratio (125Hz) :	More than 60dB
Crosstalk :	More than 60dB (1kHz, 0VU)
Channel separation :	More than 30dB (1kHz, 0VU)
Recording bias frequency :	108kHz
Tape speed TTA-100 (TTA-111S) :	3,000Hz ± 1.5 %
Wow & flutter :	Less than 0.045 % (JIS/WRMS, PB)
Take-up torque :	28~48 g-cm
Fast forward torque :	120~190 g-cm
Rewind torque :	120~190 g-cm
Back-tension :	5~7 g-cm
Test tape :	METAL TTA-620 (TTA-119MP) CrO ₂ TTA-610 (TTA-119H) NORMAL TTA-600 (TTA-119K)

EXPLODED VIEW - 1

REF. NO.	PART NO.	DESCRIPTION
A	87-067-581-010	BVT2 + 3 - 15 W/O SLOT
B	87-067-660-010	BVT2 + 3 - 8 W/O SLOT (B)
C	87-591-094-410	QIT + 3 - 6
D	87-761-096-410	VFT2 + 3 - 10
E	87-571-093-410	VIT + 3 - 5
F	87-067-668-010	BVTT + 3 - 6
G	87-067-703-010	BVT2 + 3 - 10 W/O SLOT

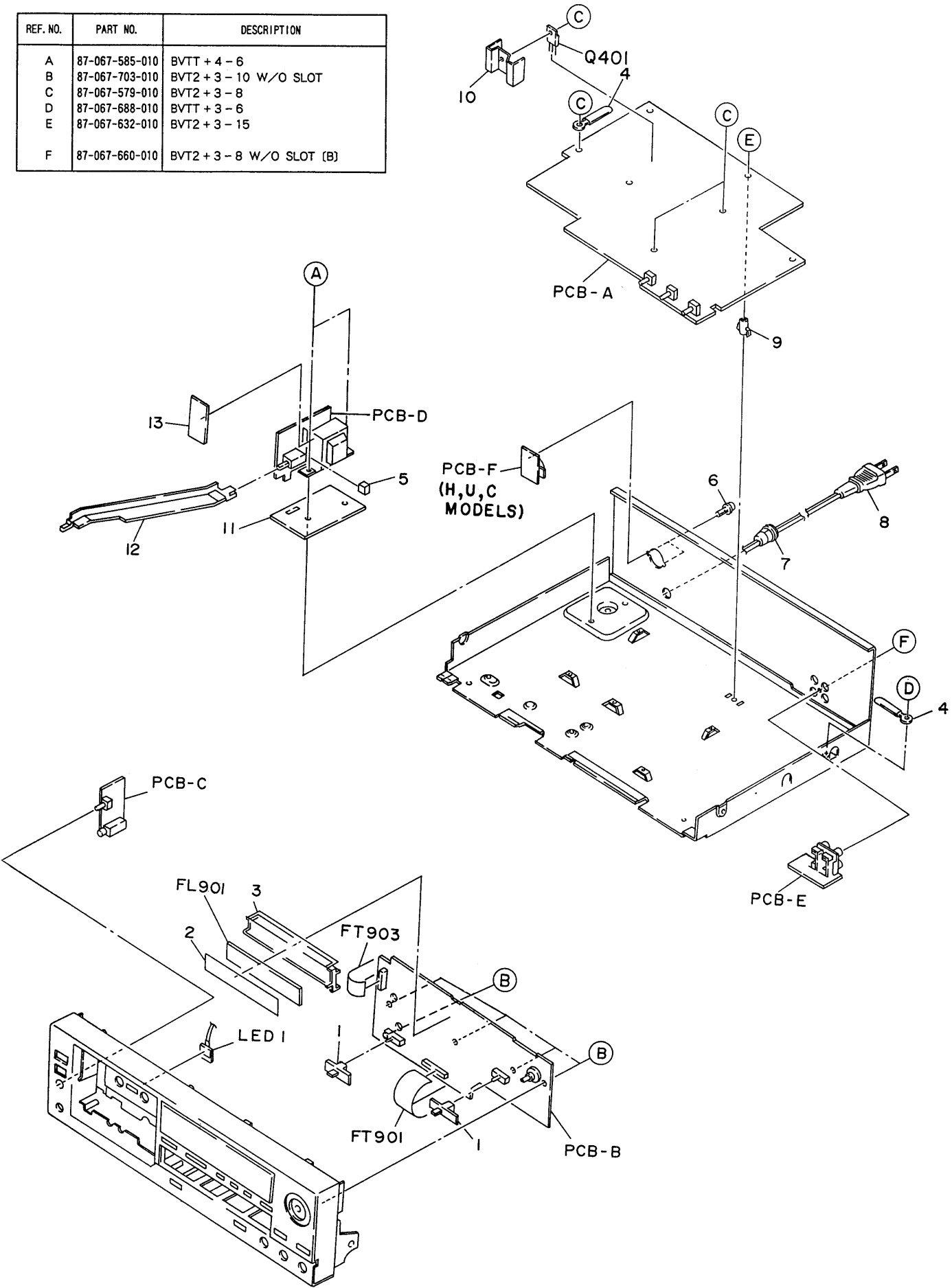


MECHANICAL PARTS LIST

PART NO. CHANGED	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1-1	★09-047-697-010	FRONT CABINET ASSY (H, E, K)	※	1
	1-1	★09-047-698-010	FRONT CABINET ASSY (U)	※	1
	1-1	★09-047-699-010	FRONT CABINET ASSY (C)	※	1
	1-2	★80-DS3-007-019	KNOB, BIAS		3
	1-3	★81-DS2-021-019	KNOB, REC	※	1
	1-4	★81-DS2-032-010	BADGE, 3H	※	1
	1-5	★81-DS2-005-019	WINDOW, BOX	※	1
	1-6	★81-DS2-003-010	PANEL, CASSETTE		1
	1-7	★81-DS1-212-019	T – SPRING, EJECT 1		1
	1-8	★81-DS1-209-019	T – SPRING, EJECT R		1
	1-9	★81-DS1-008-019	BUTTON, POWER		1
	1-10	84-790-013-019	BOX, CASSETTE		1
	1-11	★81-DS2-020-010	KNOB, HP	※	1
	1-12	★87-063-144-010	DAMPER, OIL 37		1
	1-13	★81-DS2-010-019	BUTTON, EJECT	※	1
	1-14	★84-793-031-110	SHEET, BIAS 89		1
	1-15	★81-DS3-209-019	C – SPRING		1
	1-16	★81-DS2-008-019	KEY, SOURCE	※	1
	1-17	★81-DS2-016-019	INDICATION, LED	※	1
	1-18	★81-DS2-017-019	INDICATION, REC	※	1
	1-19	★81-DS2-006-119	KEY, PLAY	※	1
	1-20	★81-DS2-007-019	KEY, COUNTER	※	1
	1-21	★81-DS2-018-010	FOOT	※	4
	1-22	---	CHASSIS, MAIN		1
	1-23	★81-DS3-203-019	LVR EJECT		1
	1-24	★81-DS2-201-019	HOLDER, MECHANISM	※	1
	1-25	★81-DS2-025-019	PANEL, REAR (H)	※	1
	1-25	★81-DS2-029-019	PANEL, REAR (U)	※	1
	1-25	★81-DS2-031-019	PANEL, REAR (C)	※	1
	1-25	★81-DS2-027-019	PANEL, REAR (E)	※	1
	1-25	★81-DS2-026-019	PANEL, REAR (K)	※	1
	1-26	★82-226-274-010	DAMPER, 80 – 60 – 3		1
	1-27	★84-793-026-110	CABINET, STEEL		1
	1-28	---	BINDER, WIRE		2
	1-29	★84-790-204-019	HOOK, EJECT		1
	1-30	★82-238-205-019	C – SPRING, AMTS		2
	1-31	★84-790-205-019	C – SPRING, HOOK		1
	1-32	★84-790-032-319	PANEL, AMTS		1
	1-33	★84-790-202-019	RUBBER, AMTS (H, C, E, K)		1
	1-33	★84-790-217-010	RUBBER, AMTS (U)		1
	1-34	★81-DS2-207-010	SHEET, SIDE		1

EXPLODED VIEW – 2

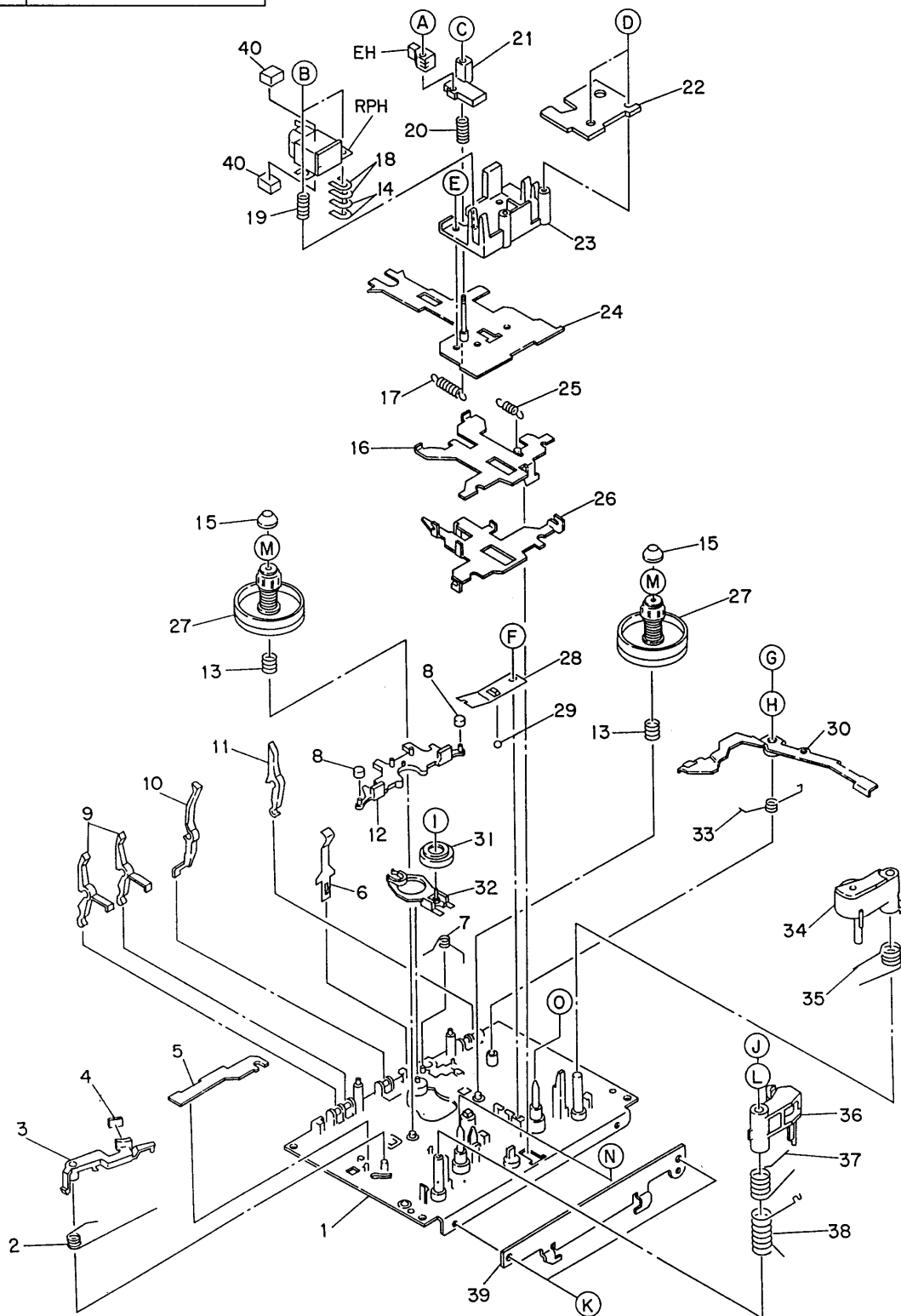
REF. NO.	PART NO.	DESCRIPTION
A	87-067-585-010	BVTT + 4 - 6
B	87-067-703-010	BVT2 + 3 - 10 W/O SLOT
C	87-067-579-010	BVT2 + 3 - 8
D	87-067-688-010	BVTT + 3 - 6
E	87-067-632-010	BVT2 + 3 - 15
F	87-067-660-010	BVT2 + 3 - 8 W/O SLOT (B)



PART NO. CHANGED	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	2-1	★81-DS2-011-019	KNOB, SL	※	2
	2-2	★81-DS2-015-019	SHEET, FL	※	1
	2-3	★81-DS2-204-019	GUIDE, FL	※	1
	2-4	---	BINDER, WIRE		2
	2-5	★81-DS2-205-019	CUSHION, G 10 - 10 - 5.5	※	1
	2-6	★87-084-099-010	RIVET, NYLON 3 - 5.5 SP (H, U, C)		2
	2-7	★87-085-184-010	BUSHING, AC CORD (H, U, C)		1
	2-7	★87-085-185-010	BUSHING, AC CORD (E, K)		1
	2-8	★87-034-749-019	CORD, AC (H)		1
	2-8	★87-034-583-019	CORD, AC (U, C)		1
	2-8	★82-187-797-019	CORD, AC (E)		1
	2-8	★82-187-796-019	CORD, AC (K)		1
	2-9	---	HOLDER, P.C.B		1
	2-10	---	HEAT SINK		1
	2-11	---	SHIELD, PT H		1
	2-12	★81-DS2-203-019	ROD, POWER	※	1
	2-13	---	SHIELD, PT V		1

EXPLODED VIEW - 3

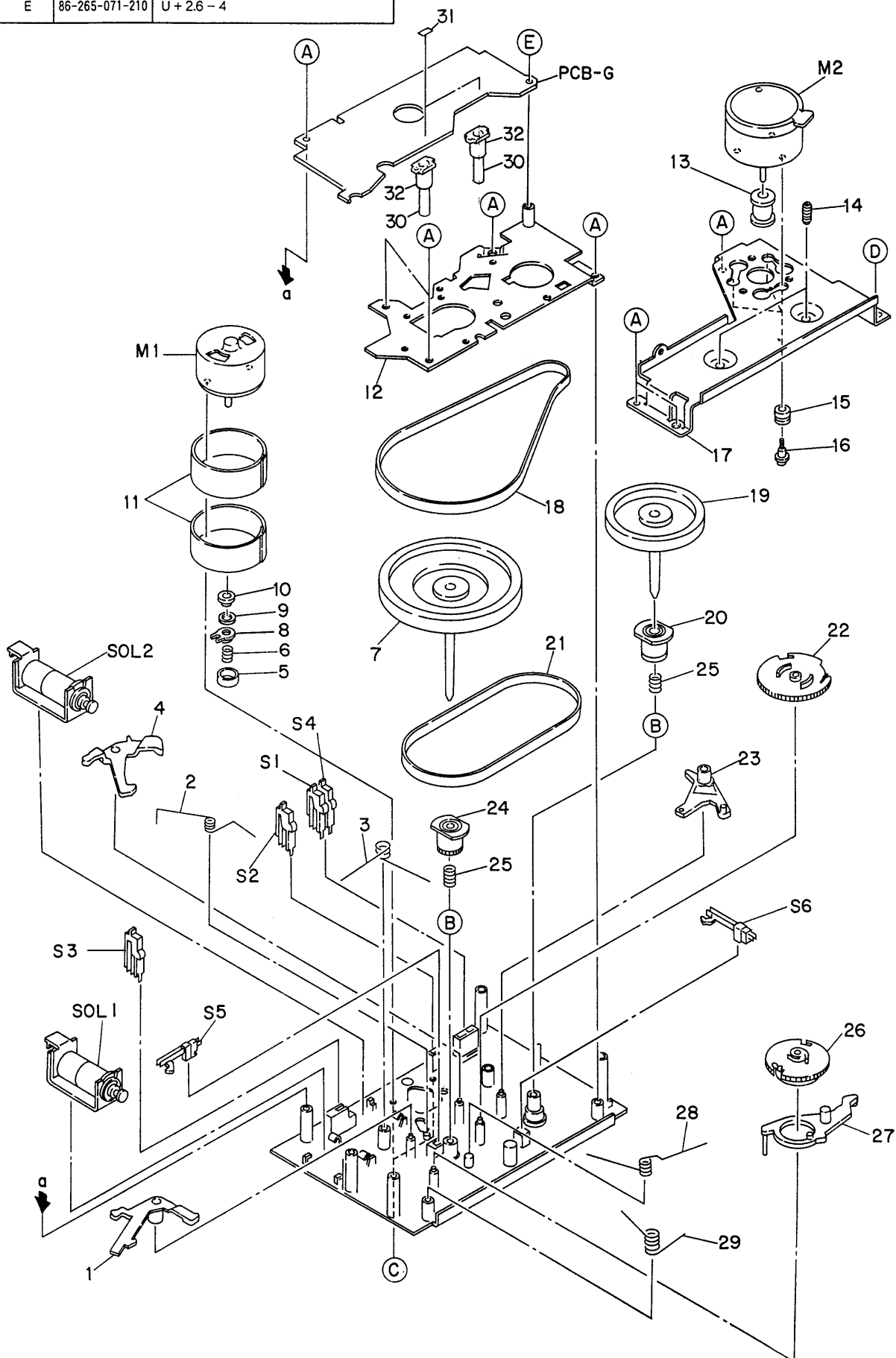
REF. NO.	PART NO.	DESCRIPTION
A	87-261-036-010	V + 2 - 8
B	87-081-543-010	U + 2 - 9
C	87-081-963-010	NUT2 - 3.5
D	87-265-034-410	V + 2 - 5 N1
E	87-263-033-010	V + 2 - 4
F	87-341-035-210	UT1 + 2 - 6
G	87-341-038-210	UT1 + 2 - 12
H	87-081-414-010	W2 - 6 - 0.4
I	87-081-944-010	PW1.5 - 3.5 - 0.5
J	87-391-105-010	N - 2 - 4 - 1.6
K	87-081-481-210	VTT + 3 - 5
L	87-067-006-010	W2 - 5 - 0.2
M	87-081-808-010	PW1.7 - 3.5 - 0.25
N	87-067-170-010	PW2.65 - 4.7 - 0.5
O	82-416-358-010	PW2.5 - 6 - 0.5



PART NO. CHANGED	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	3-1	★86-574-201-410	OUTSERT ASSY		1
	3-2	★81-507-223-010	T – SPRING, B.T		1
	3-3	★81-507-222-010	LEVER, BACK TENSION		1
	3-4	★86-574-225-010	FELT 2.5 – 6 – 1		1
	3-5	★81-505-238-010	PLATE, EJECT BLOCKING		1
	3-6	★86-574-216-010	P – SPRING, CASSETTE		1
	3-7	★86-574-219-110	T – SPRING, IDLER		1
	3-8	★81-507-229-010	BRAKE, G		2
	3-9	★81-505-241-210	LEVER, CHROME REC BLOCKING		2
	3-10	★81-505-242-210	LEVER, METAL		1
	3-11	★81-505-240-210	LEVER, CASSETTE SENSOR		1
	3-12	★81-505-236-310	LEVER, SLIDE BRAKE		1
	3-13	★81-507-219-010	C – SPRING, REEL S		2
	3-14	★86-543-258-010	SPACER, HEAD 0.2		2
	3-15	★82-303-398-010	CAP, REEL PLATFORM		2
	3-16	★81-505-207-010	PLATE, PAUSE		1
	3-17	★86-543-241-010	E – SPRING, SLIDE CHASSIS B		1
	3-18	★81-507-227-010	SPACER		2
	3-19	★86-543-224-010	C – SPRING, AZIMUTH		1
	3-20	★86-543-225-010	C – SPRING, EH		1
	3-21	★86-543-204-110	HOLDER, EH		1
	3-22	★82-226-211-010	COVER, HEAD		1
	3-23	★86-543-203-210	BASE, HEAD		1
	3-24	★86-574-203-110	HEAD CHASSIS ASSY		1
	3-25	★81-505-266-010	E – SPRING, PLATE PAUSE		1
	3-26	★81-507-220-010	PLATE, PINCH LEVER		1
	3-27	80-ZM5-226-010	REEL TABLE S ASSY		2
	3-28	★81-507-224-010	P – SPRING, CHASSIS		1
	3-29	★87-073-005-010	STEEL BALL, 2		1
	3-30	★81-505-307-410	LEVER, BRAKE		1
	3-31	★81-505-251-210	FR IDLER SUB ASSY		1
	3-32	★86-574-208-110	LEVER FRP ASSY		1
	3-33	★86-574-218-010	T – SPRING, BRAKE		1
	3-34	81-505-210-210	PINCH LEVER F ASSY		1
	3-35	★81-505-267-010	T – SPRING, PINCH F		1
	3-36	81-507-207-310	PINCH LEVER S ASSY		1
	3-37	★86-543-257-010	T – SPRING, PINCH LEVER S		1
	3-38	★81-507-228-010	C – SPRING, PINCH LEVER S		1
	3-39	★86-543-231-210	HOLDER, SLIDE CHASSIS		1
	3-40	★80-DS1-247-010	SHEET, HEAD		2

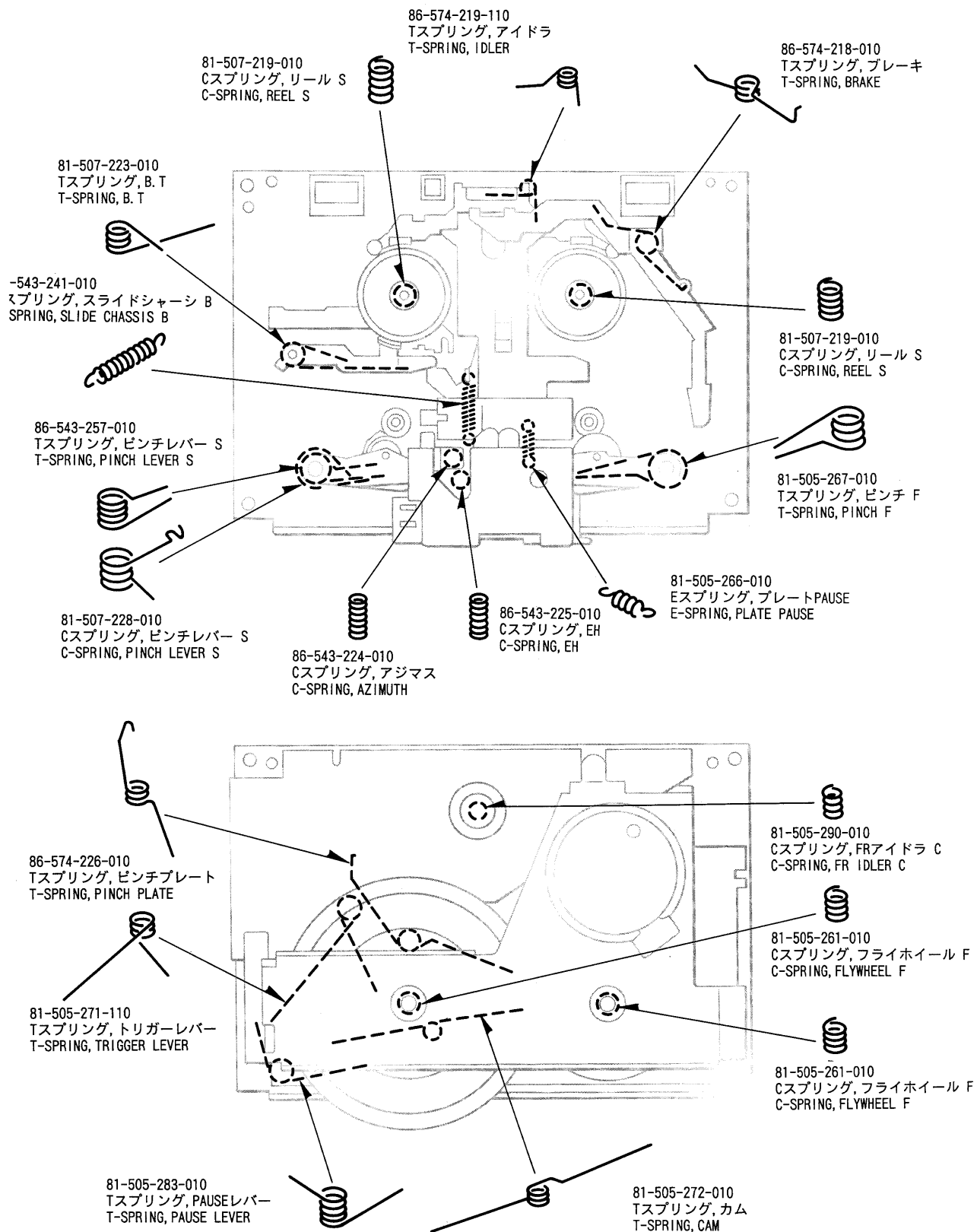
EXPLODED VIEW – 4

REF. NO.	PART NO.	DESCRIPTION
A	87-342-074-010	UT ₂ + 2.6 – 8
B	87-067-718-010	PW3 – 8 – 0.5
C	86-574-231-010	SCREW V + 2.6 – 8.2
D	81-505-341-010	VFT + 2.6 – 31.5
E	86-265-071-210	U + 2.6 – 4



PART NO. CHANGED	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	4-1	★81-505-233-010	LEVER, PAUSE TRIGGER		1
	4-2	★86-574-226-010	T – SPRING, PINCH PLATE		1
	4-3	★81-505-271-110	T – SPRING, TRIGGER LEVER		1
	4-4	★81-505-231-010	LEVER, PLAY TRIGGER		1
	4-5	★86-574-205-110	PULLEY, REEL MOTOR		1
	4-6	★81-505-290-010	C – SPRING, FR IDLER C		1
	4-7	★86-574-212-010	FLYWHEEL S ASSY		1
	4-8	★86-574-207-010	LEVER, CLUTCH		1
	4-9	★86-574-211-010	FELT 3.8 – 7.6 – 0.8		1
	4-10	★86-574-206-010	STOPPER, SPRING		1
	4-11	★82-110-647-010	SHIELD PLATE M		2
	4-12	★80-ZM5-222-010	MECHANISM CHASSIS ASSY		1
	4-13	★86-575-205-110	PULLEY, MAIN MOTOR		1
	4-14	★82-565-373-010	SCREW, THRUST		2
	4-15	★87-087-029-010	CUSHION, RBR		3
	4-16	★87-067-441-010	SCREW, MOTOR STOPPER		3
	4-17	★81-507-221-110	HOLDER, MOTOR		1
	4-18	86-574-221-010	BELT A		1
	4-19	★86-574-214-010	FLYWHEEL T ASSY		1
	4-20	★81-505-225-110	GEAR, FLYWHEEL		1
	4-21	87-507-247-110	BELT B RBR		1
	4-22	★81-505-234-210	GEAR, PLAY CAM		1
	4-23	★81-505-230-010	LEVER, PLAY		1
	4-24	★81-505-354-110	GEAR, FLYWHEEL 2.7		1
	4-25	★81-505-261-010	C – SPRING, FLYWHEEL F		2
	4-26	★81-505-235-210	GEAR, PAUSE		1
	4-27	★81-505-308-010	LEVER, PAUSE B		1
	4-28	★81-505-272-010	T – SPRING, CAM		1
	4-29	★81-505-283-010	T – SPRING, PAUSE LEVER		1
	4-30	★86-574-223-010	LEVER, SENSOR		2
	4-31	★86-574-229-010	CUSHION, G 2.3 – 3 – 0.45		2
	4-32	★86-574-230-010	SHEET, SENSOR		2

SPRING APPLICATION POSITION



PRINTING THE SERVICE MANUAL

The PDF of this service manual is not designed to be printed from cover to cover. The pages vary in size, and must therefore be printed in sections based on page dimensions.

NON-SCHEMATIC PAGES

Data that does NOT INCLUDE schematic diagrams are formatted to 8.5 x 11 inches and can be printed on standard letter-size and/or A4-sized paper.

SCHEMATIC DIAGRAMS

The schematic diagram pages are provided in two ways, full size and tiled. The full-sized schematic diagrams are formatted on paper sizes between 8.5" x 11" and 18" x 30" depending upon each individual diagram size. Those diagrams that are LARGER than 11" x 17" in full-size mode have been tiled for your convenience and can be printed on standard 11" x 17" (tabloid-size) paper, and reassembled.

TO PRINT FULL SIZE SCHEMATIC DIAGRAMS


If you have access to a large paper plotter or printer capable of outputting the full-sized diagrams, output as follows:

- 1) Note the page size(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.
- 2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your large format printer. Confirm that the printer settings are set to output the indicated page size or larger.
- 3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

TO PRINT TILED VERSION OF SCHEMATICS



Schematic pages that are larger than 11" x 17" full-size are provided in a 11" x 17" printable tiled format near the end of the document. These can be printed to tabloid-sized paper and assembled to full-size for easy viewing.


If you have access to a printer capable of outputting the tabloid size (11" x 17") paper, then output the tiled version of the diagram as follows:

- 1) Note the page number(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.
- 2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your printer. Confirm that the plotter settings are set to output 11" x 17", or tabloid size paper in landscape () mode.
- 3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

TO PRINT SPECIFIC SECTIONS OF A SCHEMATIC

To print just a particular section of a PDF, rather than a full page, access the Graphics Select tool in the Acrobat Reader tool bar.

- 1) To view the Graphics Select Tool, press and HOLD the mouse button over the Text Select Tool which looks like: 
This tool will expand to reveal to additional tools.
Choose the Graphics Select tool by placing the cursor over the button on of the far right that looks like: 
- 2) After selecting the Graphics Select Tool, place your cursor in the document window and the cursor will change to a plus (+) symbol. Click and drag the cursor over the area you want to print. When you release the mouse button, a marquee (or dotted lined box) will be displayed outlining the area you selected.
- 3) With the marquee in place, go to the file menu and select the "Print..." option. When the print window appears, choose the option under the section called "Print Range" which says "Selected Graphic".

Select OK and the output will print only the area that you outlined with the marquee. 

(continued >)