TC-KB820S

SERVICE MANUAL

AEP Model
UK Model
Australian Model

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.

Model Name Using Similar Mechanism	TC-KE400S
Tape Transport Mechanism Type	TCM-190VB12CSS

SPECIFICATIONS

System

Recording system
4-track 2-channel stereo

Fast winding time (approx.)
90 sec. (with Sony C-60 cassette)

Bias
AC bias

Heads
Erasing head × 1 (F&F head)
Playing/Recording head × 1 (SD head)

Motors
Capstan motor × 1 (DC servo motor)
Reel motor × 1 (DC motor)

Signal-to-noise ratio (at peak level, weighted, and with Dolby NR off)
Type I tape, Sony Type I (NORMAL): 55 dB
Type II tape, Sony Type II (HIGH): 57 dB
Type IV tape, Sony Type IV (METAL): 58 dB

S/N ratio improvement (approximate values)
With Dolby B NR on: 5 dB at 1 kHz, 10 dB at 5 kHz
With Dolby C NR on: 15 dB at 500 Hz, 20 dB at 1 kHz
With Dolby S NR on: 10 dB at 100 Hz, 24 dB at 1 kHz

Harmonic distortion
0.4% (with Type I tape, Sony Type I (NORMAL): 160n Wb/m 315 Hz, 3rd H.D.)
1.8% (with Type IV tape, Sony Type IV (METAL): 250n Wb/m 315 Hz, 3rd H.D.)

Frequency response (Dolby NR off)
Type I tape, Sony Type I (NORMAL):
30 - 16,000 Hz (±3 dB, IEC)
20 - 17,000 Hz (±6 dB)
Type II tape, Sony Type II (HIGH):
30 - 17,000 Hz (±3 dB, IEC)
20 - 18,000 Hz (±6 dB)
Type IV tape, Sony Type IV (METAL):
30 - 19,000 Hz (±3 dB, IEC)
30 - 13,000 Hz (±3 dB, –4dB recording)
20 - 20,000 Hz (±6 dB)

Inputs

Line inputs (phono jacks)
Sensitivity: 0.16 V
Input impedance: 47 kilohms

Outputs

Line outputs (phono jacks)
Rated output level: 0.5 V at a load impedance of 47 kilohms
Load impedance: Over 10 kilohms

Headphones (stereo phone jack)
Output level: 0.25 mW at a load impedance of 32 ohms

– Continued on next page –

STEREO CASSETTE DECK

MICROFILM

SONY

General

Power requirements

Where purchased	Power requirements
U.K and Continental Europe	220 - 230 V AC, 50/60 Hz
Australia	240 V AC, 50/60 Hz

Power consumption
20 W

Dimensions (approx.) (w/h/d)
430 × 123 × 305 mm (17 × 4 7/8 × 12 1/8 inches) incl. projecting parts and controls

Mass (approx.)
4.6 kg (10 lbs 3 oz)

Supplied accessories
Audio connecting cords (2)

Design and specifications are subject to change without notice.

Flexible Circuit Board Repairing

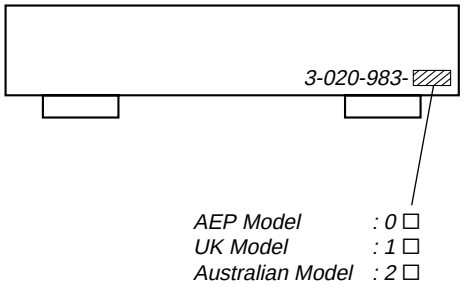
- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

MODEL IDENTIFICATION

– BACK PANEL –



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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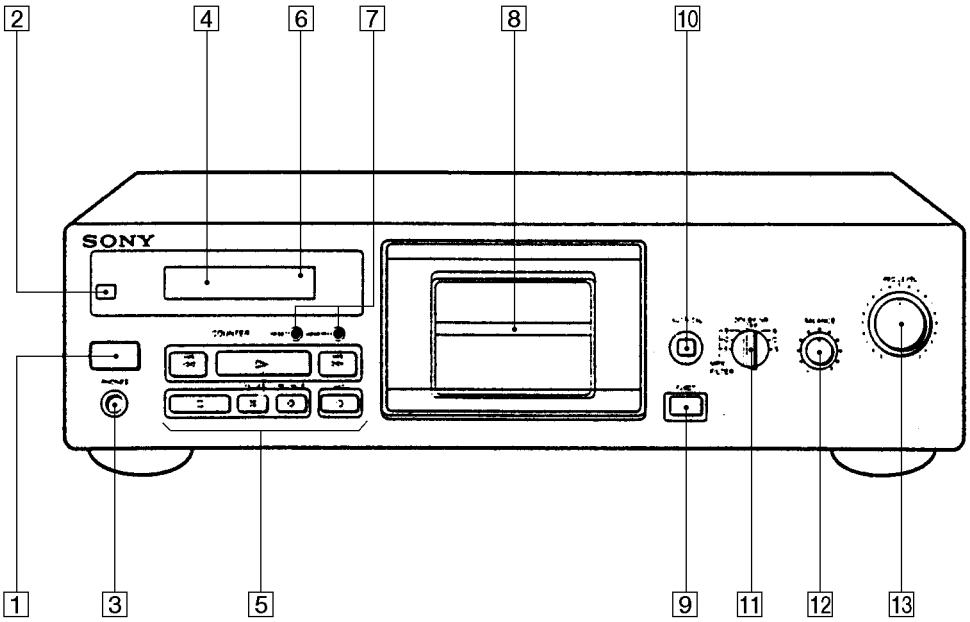
SECTION 1
GENERAL

LOCATION OF CONTROLS



1 I/O (Power) button
2 Remote control sensor
3 PHONES jack
4 Display panel
5 Tape operation buttons
AMS* ◀◀ button
▷ button
AMS* ▶▶ button
■ button
❚❚ PAUSE button
O REC MUTING button
● REC button
6 Tape counter
7 Counter buttons
RESET button
MEMORY button
8 Cassette holder
9 ⏏ EJECT button
10 AUTO CAL button
11 DOLBY NR switch
12 BALANCE control
13 REC LEVEL control

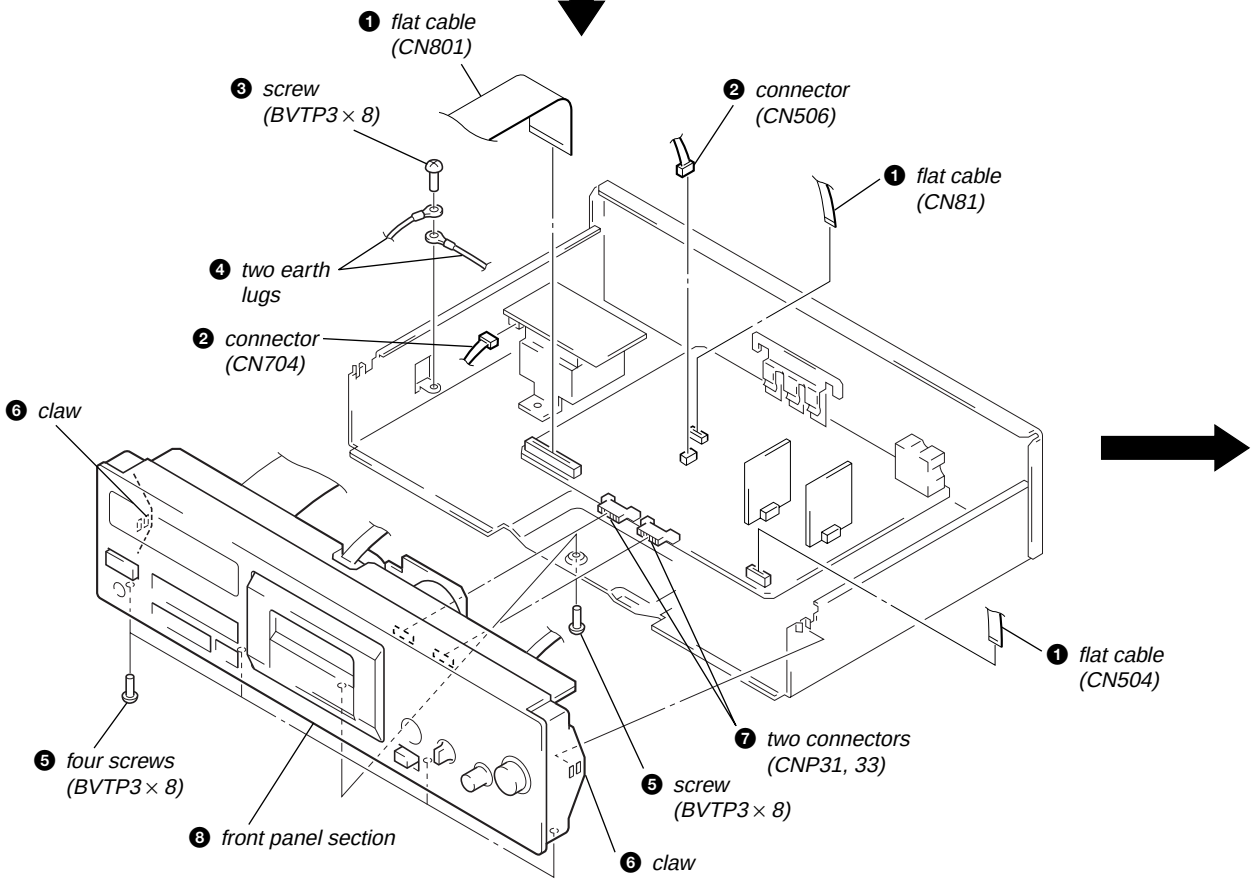
* AMS is an abbreviation for Automatic Music Sensor.

SECTION 2
DISASSEMBLY

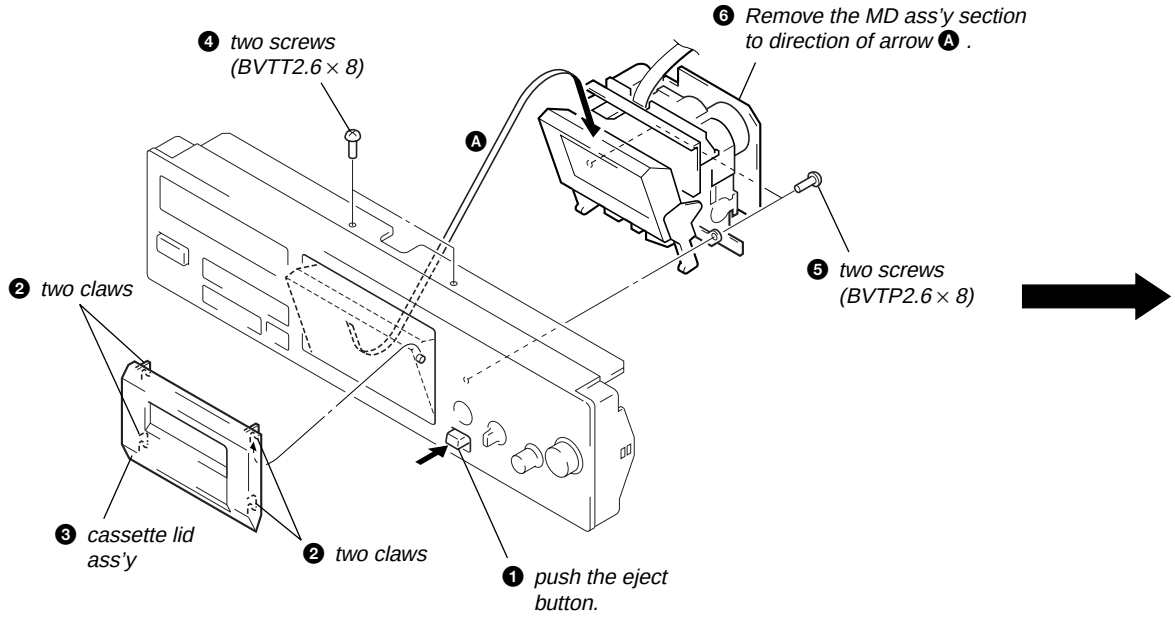
Note: Follow the disassembly procedure in the numerical order given.

CASE
Unscrew the four case attachment seven tapping screws and remove the case.

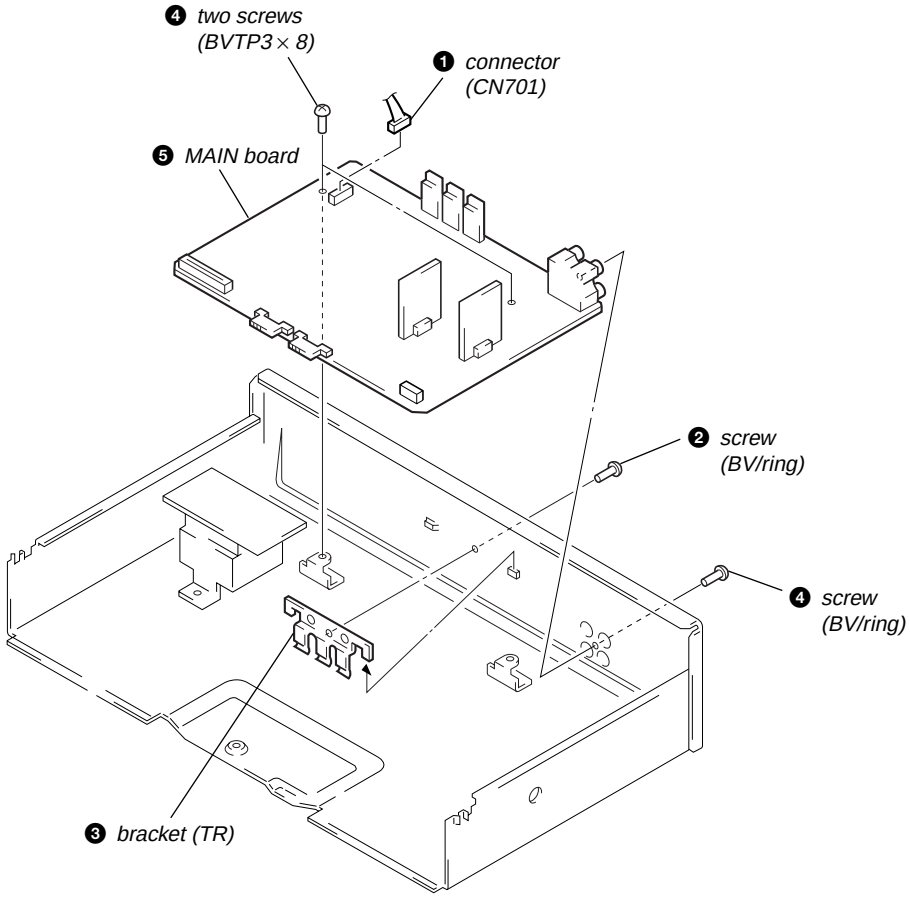
FRONT PANEL SECTION



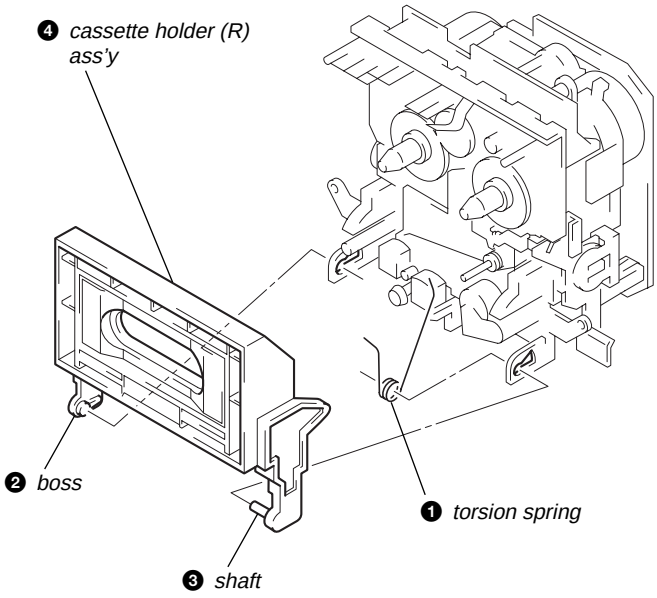
MD ASS'Y SECTION



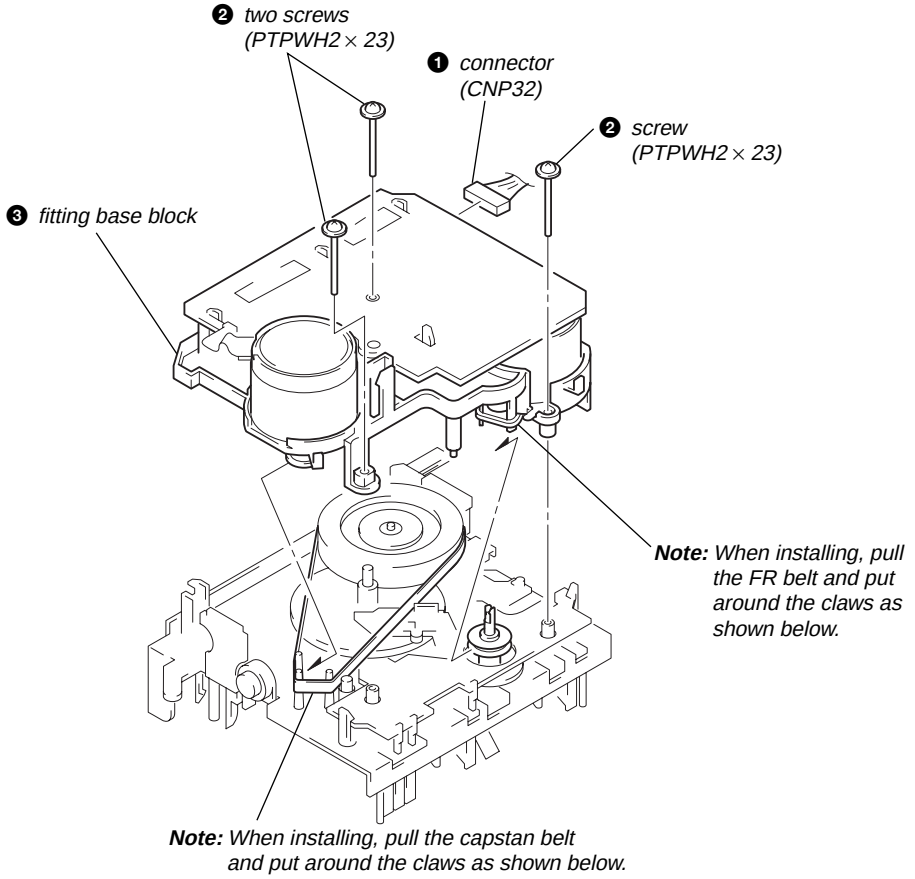
MAIN BOARD



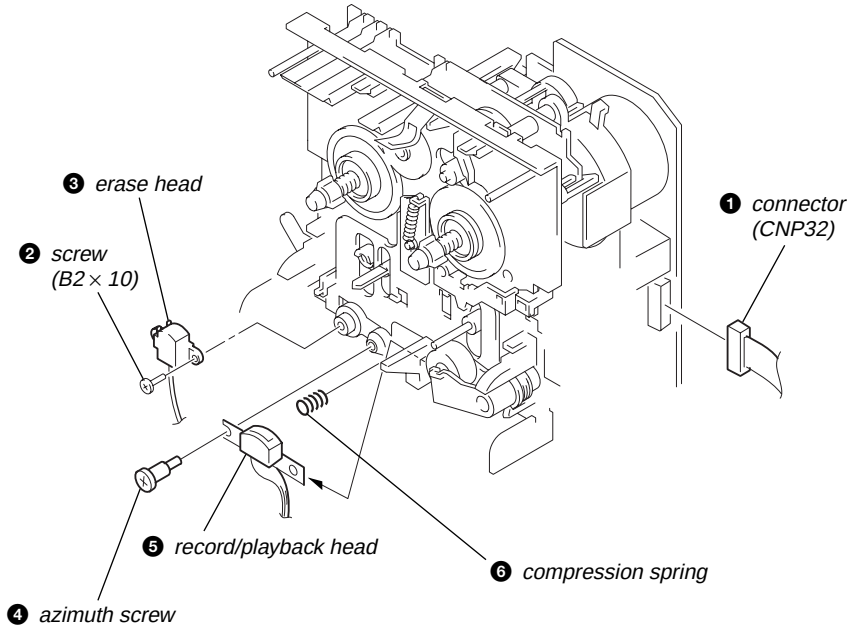
CASSETTE HOLDER (R) ASS'Y



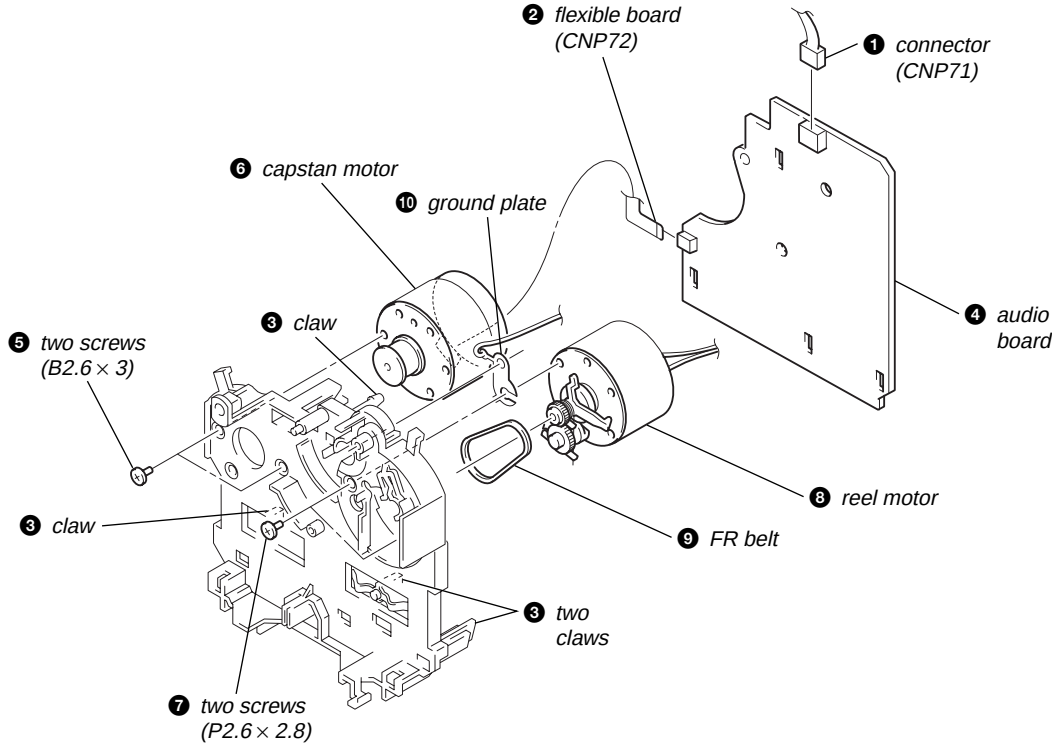
FITTING BASE BLOCK



HEAD



MOTOR


❷ flexible board (CNP72)
❶ connector (CNP71)
❻ capstan motor
❿ ground plate
❹ audio board
❸ claw
❺ two screws (B2.6 × 3)
❸ claw
❽ reel motor
❾ FR belt
❸ two claws
❼ two screws (P2.6 × 2.8)

SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured alcohol-moistened swab:
   record/playback/erase head pinch roller
   rubber belts capstan
   idler
2. Demagnetize the record/playback head with a head demagnetizer.
   (Head demagnetizer do not approach for the erase head.)
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

• Torque Measurement

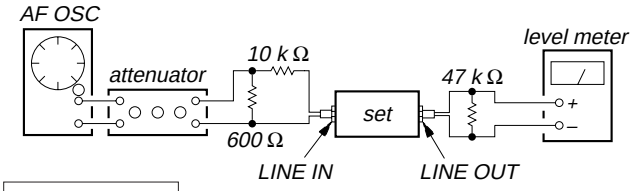
Mode	Torque Meter	Meter Reading
Forward	CQ-102C	30 to 60 g•cm (0.42 to 0.83 oz•inch)
Forward back tension	CQ-102C	2 to 7 g•cm (0.03 to 0.09 oz•inch)
FF/REW	CQ-201B	70 to 110 g•cm (0.98 to 1.52 oz•inch)

SECTION 4
ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording.
The adjustments should be performed before for both L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.
  DOLBY NR, MPX FILTER switch: OFF
- Standard Record:
  Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

– Record Mode –



0 dB = 0.775 V

Standard Input Level

input terminal	LINE IN
source impedance	10 kΩ
input signal level	0.5 V (–3.8 dB)

Standard Output Level

output terminal	LINE OUT
load impedance	47 kΩ
output signal level	0.5 V (–3.8 dB)

Test Tape

Type	Signal	Used for
P-4-A100	10 kHz, –10 dB	Azimuth Adjustment
P-4-L300	315 Hz, 0 dB	Playback Level Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment

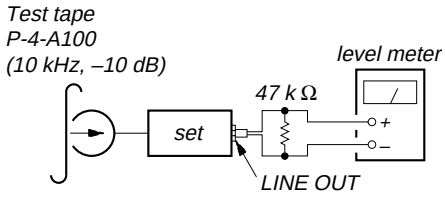
Test Mode

1. Insert a short-circuit plug into TP801 (2P) and turn ON the power switch. (Earth pin ⑲ of IC801 and turn ON the power switch.)
   At first, all the fluorescent tubes light up, then the system returns to normal display. (However, "00 00" is not displayed on the counter.)
2. To release the test mode, remove the short plug and turn off the power switch.
3. Remove the short plug after completion of adjustment.

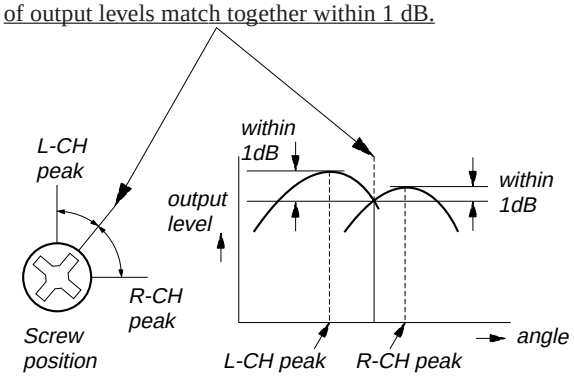
Record/Playback Head Azimuth Adjustment

Procedure:

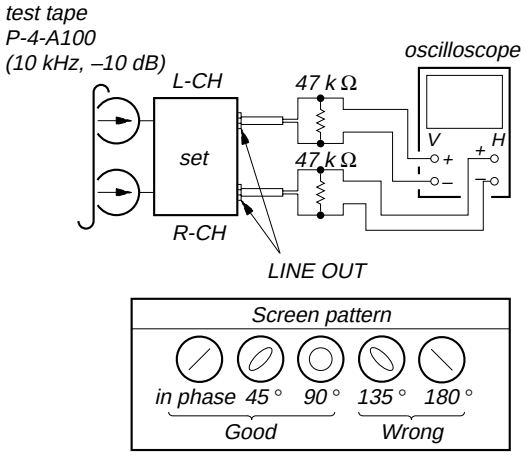
1. Mode : FWD playback



2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.

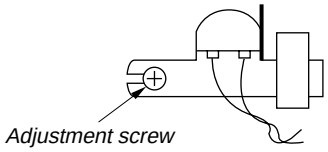


3. Phase Check
   Mode : playback



4. After the adjustment, lock the screw with locking compound.

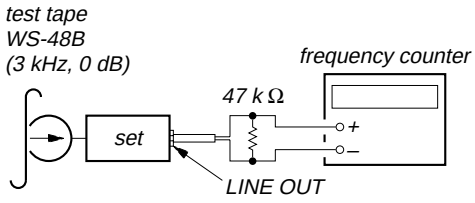
Adjustment Location: Record/Playback head



Tape Speed Adjustment

Procedure:

Mode: playback



1. Set to FWD playback mode.
2. Adjust RV71 so that the frequency counter reading becomes 3,000 ± 90 Hz.
3. If, the frequency counter reading does not become 3,000 ± 90Hz.
   Turn RV72 and back to 1st. step again.

Note: Turn RV72 to clockwise – Tape speed becomes fast.
Turn RV72 to counter clockwise – Tape speed becomes slow.

4. Frequency difference between the beginning and the end of the tape should be within 1%.

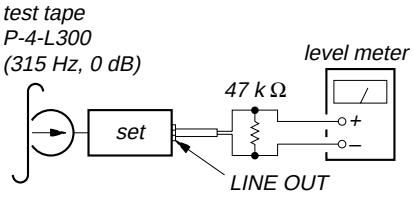
Adjustment Location: AUDIO board (See page 12.)

Sample value of Wow and Flutter: 0.3% or less W.RMS (JIS) (WS-48B)

Playback Level Adjustment

Procedure:

Mode: playback



Adjust RV11 (L-CH) and RV21 (R-CH) so that the reading on level meter meets the adjustment limits below.

Adjustment Limits:

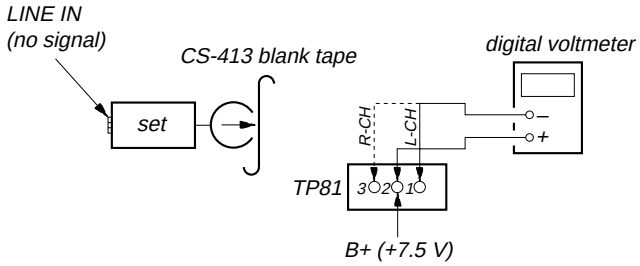
LINE OUT level: –7.7±0.5 dB (0.301 to 0.338 V)
Level difference between channels: within 0.5 dB

Check that the LINE OUT level does not change even if Playback and Stop operation is repeated several times.

Adjustment Location: AUDIO board (See page 12.)

Bias Consumption Current Adjustment

Procedure:



1. Set RV81 (L-CH) and RV91 (R-CH) to mechanical center and turn the set recording mode.
2. Connect digital voltmeter as shown by the following table.
3. Adjust the following transformers for the minimum readings on the digital voltmeter.

	Measurement Point	Adjustment Part	Value
L-CH	① and ②, TP321	T81	minimum
R-CH	③ and ②, TP321	T91	

Adjustment Location: AUDIO board (See page 12.)

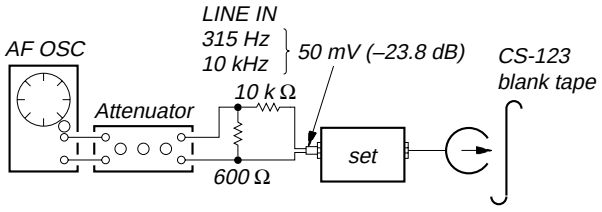
Record Bias Adjustment

Setting:

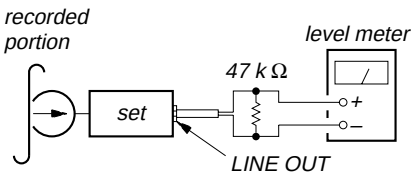
REC LEVEL control: Standard Record (See page 10.)

Procedure:

1. Mode: record



2. Mode: playback



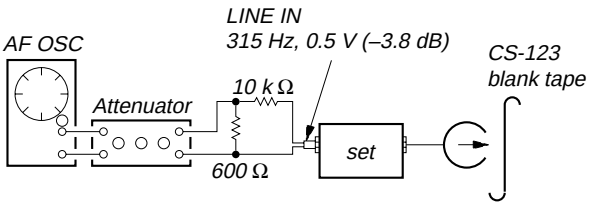
3. Adjust RV81(L-CH) and RV91 (R-CH) so that 10 kHz playback output is 0±0.5 dB relative to the 315 Hz output.

Adjustment Location: AUDIO board (See page 12.)

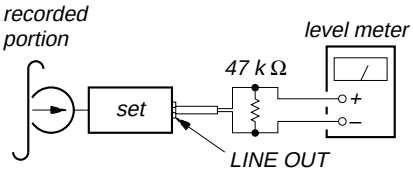
Record Level Adjustment

Setting:
REC LEVEL control: Standard Record (See page 10.)

Procedure:
1. Mode: record



2. Mode: playback

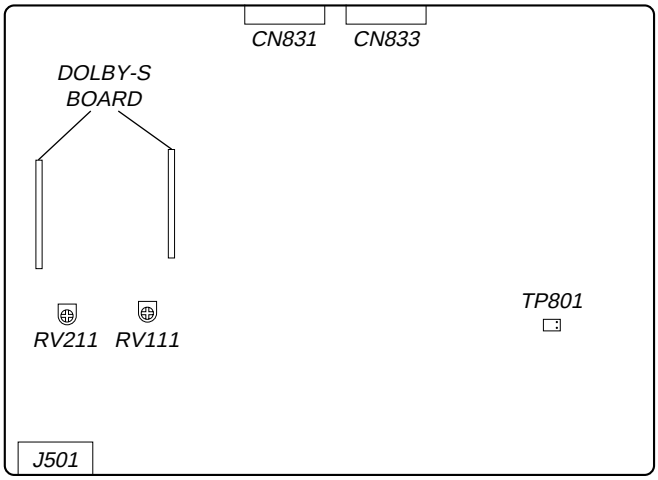


3. Adjust RV111 (L-CH) and RV211 (R-CH) so that the reading on level meter meets the adjustment limits below.

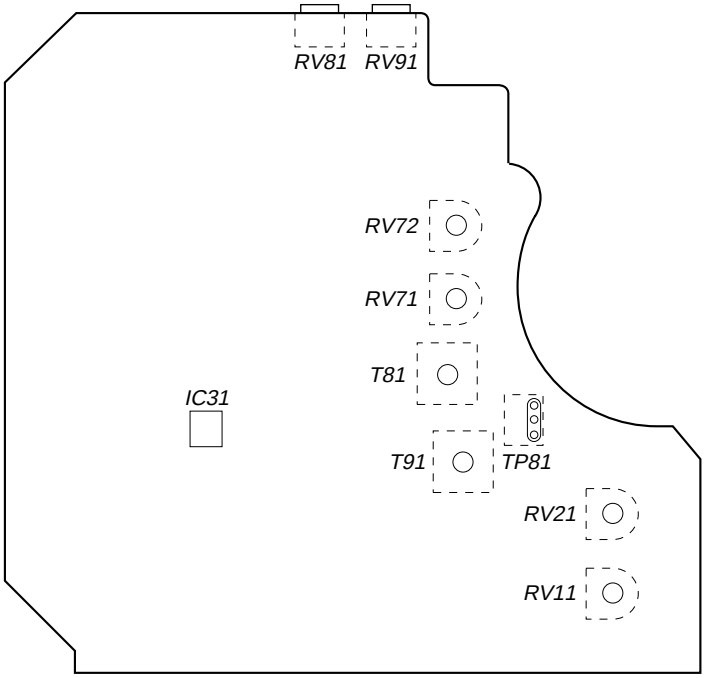
Adjustment Limits: –3.8 ± 0.5 dB (0.47 to 0.53 V)

Adjustment Location: MAIN board

Adjustment Location:
[MAIN BOARD] –COMPONENT SIDE –

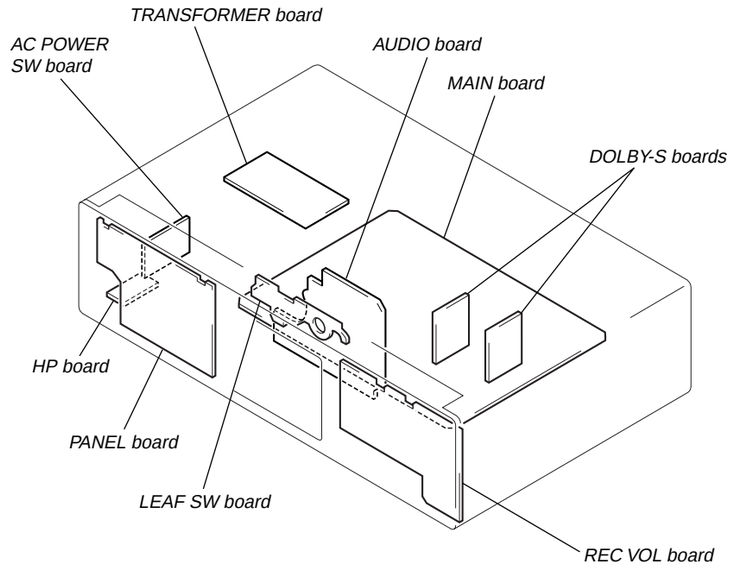


[AUDIO BOARD] –SIDE A –



SECTION 5
DIAGRAMS

• Circuit Boards Location



5-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

(In addition to this, the necessary note is each block.)

Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- : nonflammable resistor.
- : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- B+ : B+ Line.
- B− : B– Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
  ✻ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  : PB
  : REC

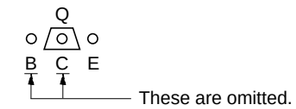
Note on Printed Wiring Boards:

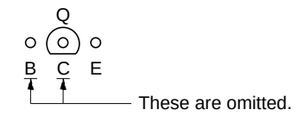
- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ● : Through hole.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

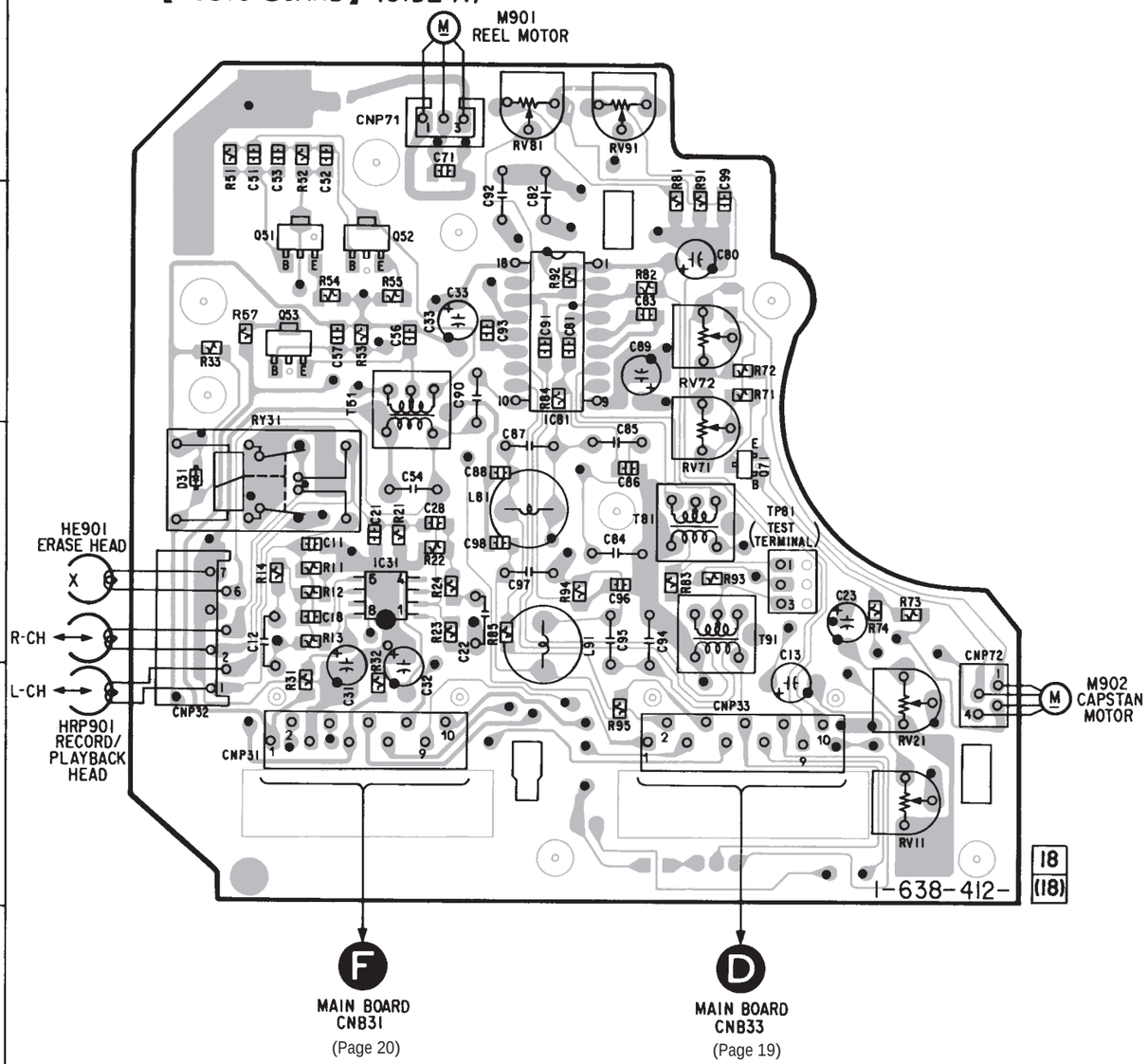
- Indication of transistor.



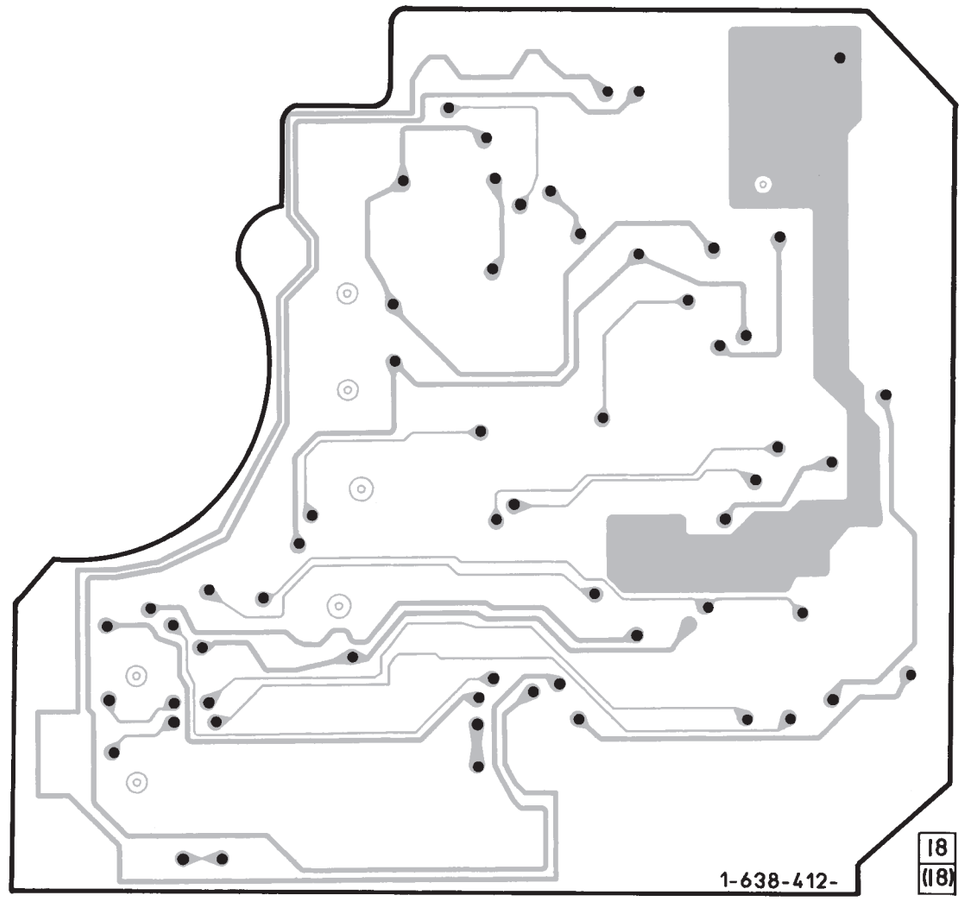


5-2. PRINTED WIRING BOARDS – MD Section – • See page 13 for Circuit Boards Location.

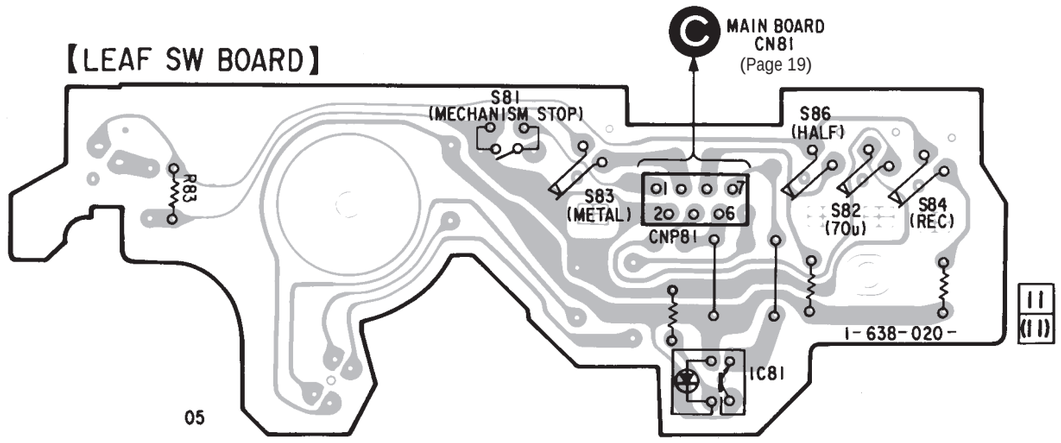
【AUDIO BOARD】(SIDE A)



【AUDIO BOARD】(SIDE B)



【LEAF SW BOARD】

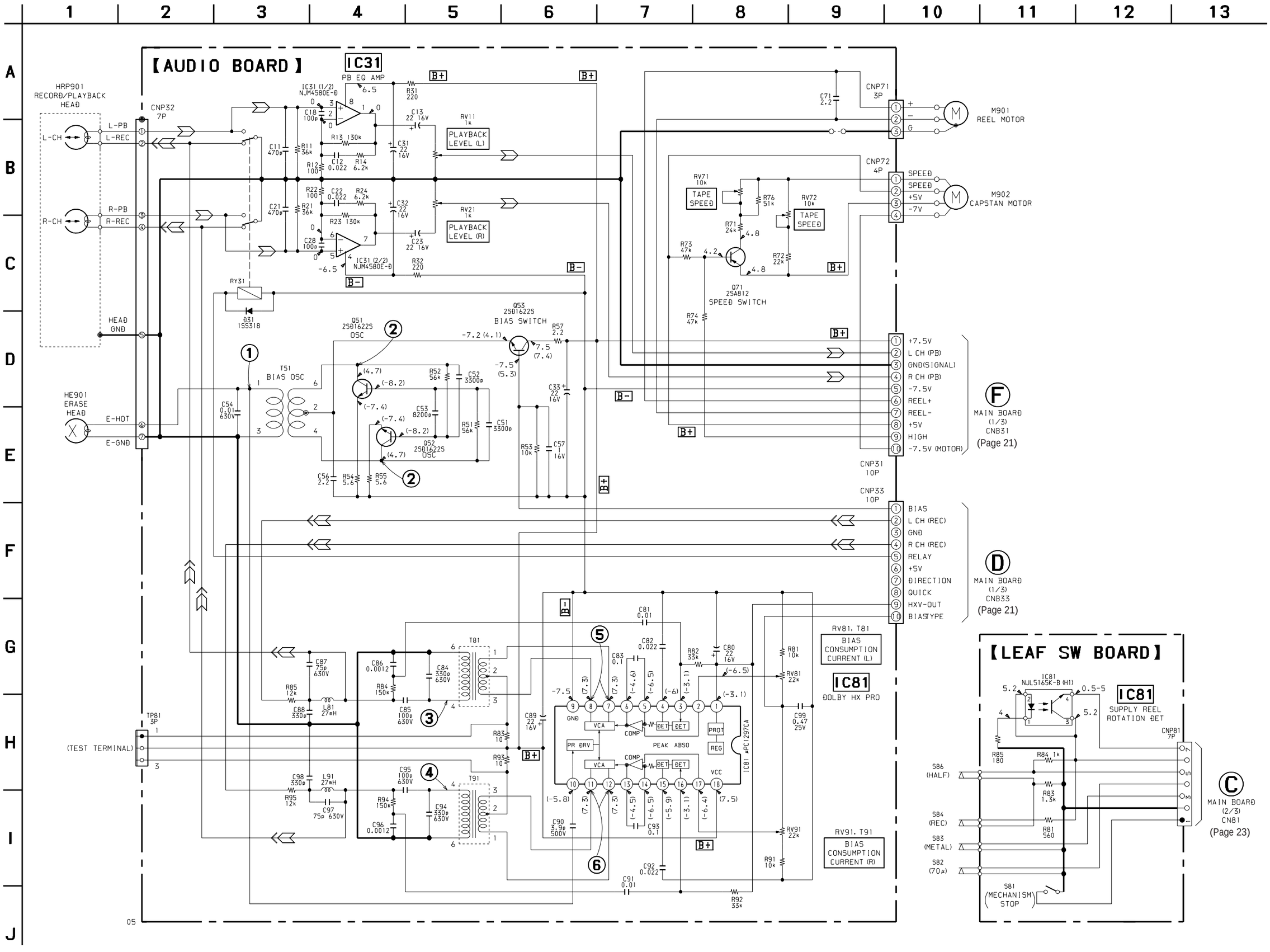


• **Semiconductor Location**

Ref. No.	Location
D31	C-1
IC31	C-2
IC81	B-3
•IC81	G-4
Q51	B-2
Q52	B-2
Q53	B-2
Q71	C-4

(Note) •:LEAF SW BOARD

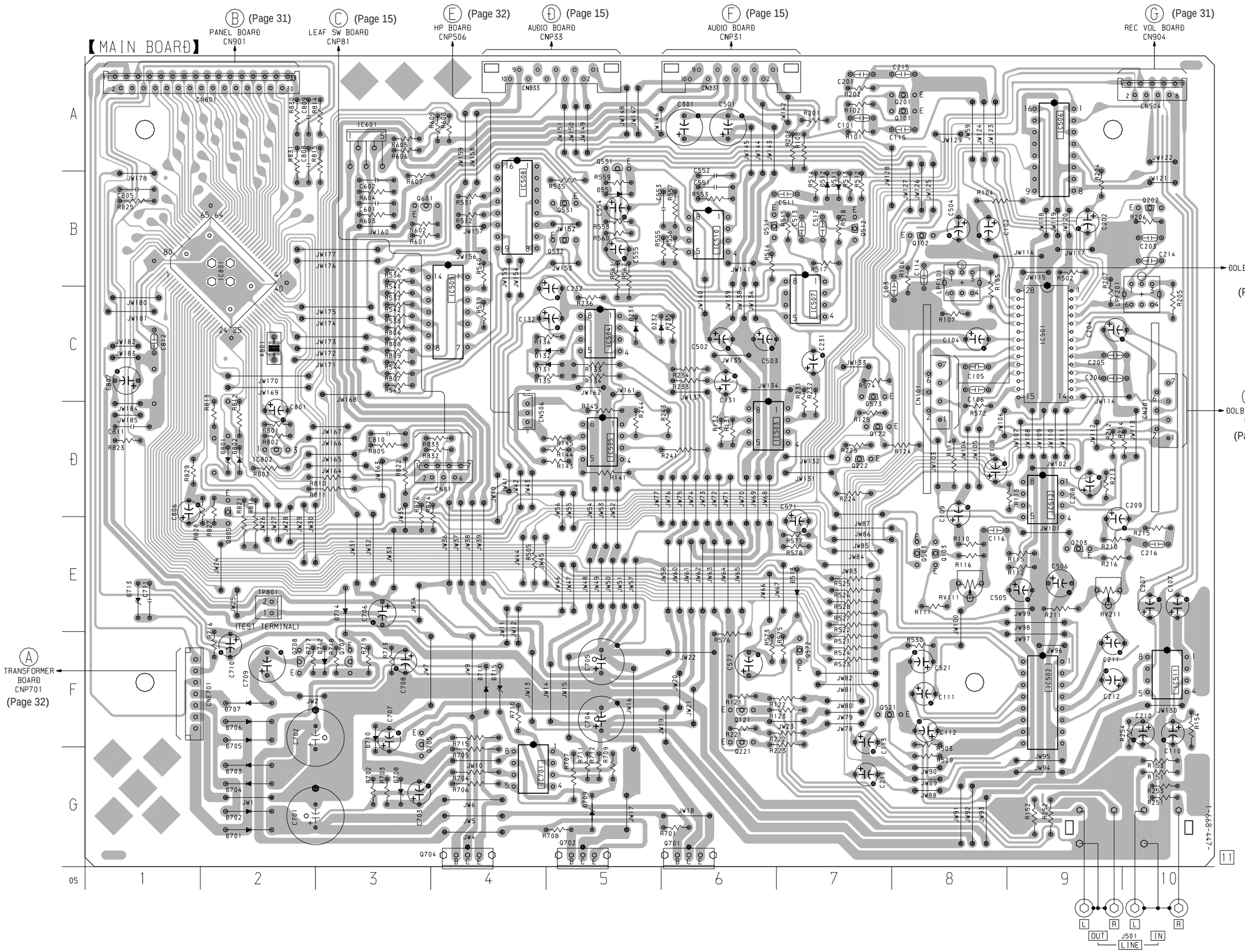
5-3. SCHEMATIC DIAGRAM – MD Section – • See page 27 for Waveforms.



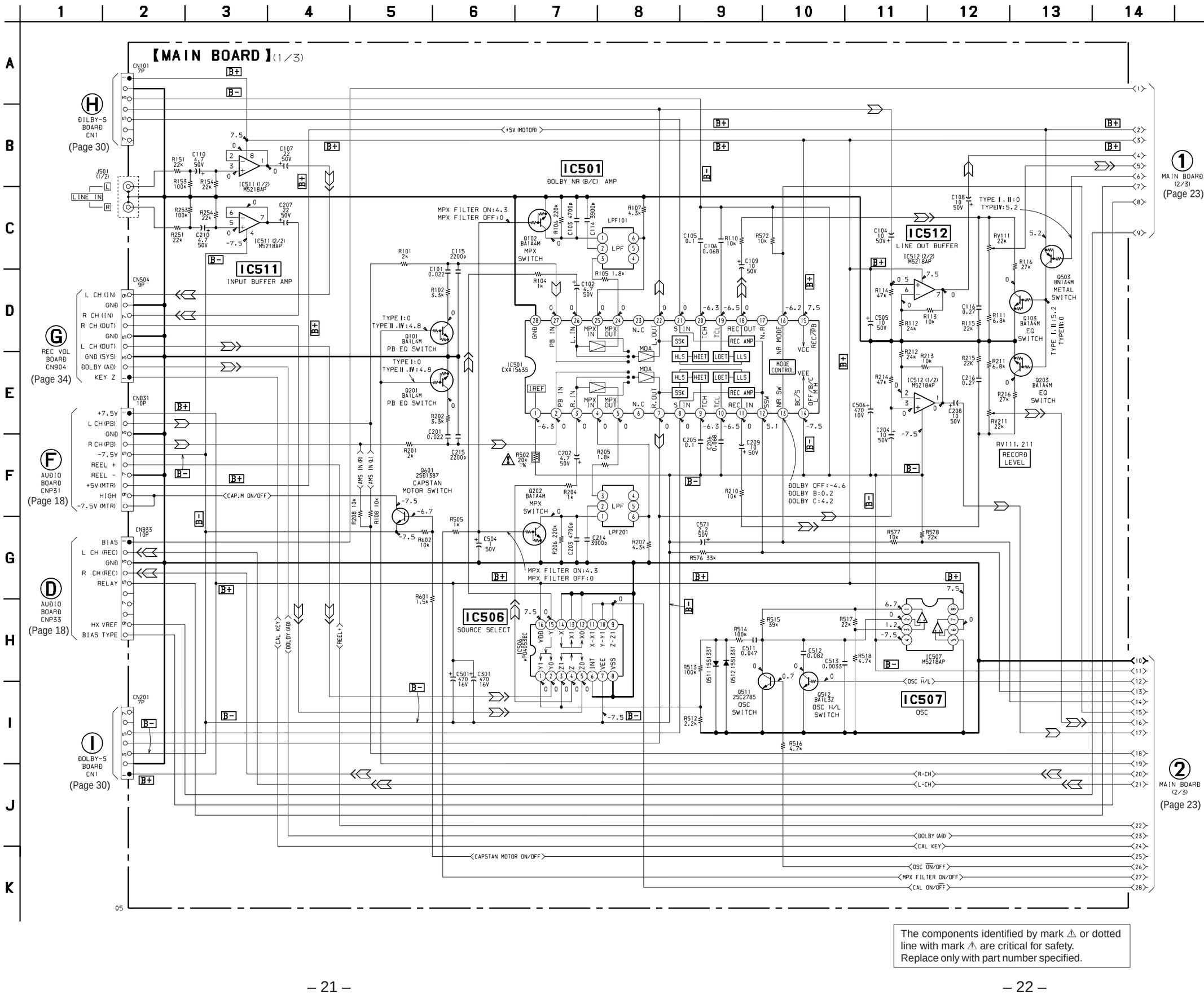
5-4. PRINTED WIRING BOARD – MAIN Section – • See page 13 for Circuit Boards Location.

• **Semiconductor Location**

Ref. No.	Location
D131	C-5
D132	C-5
D231	C-5
D232	C-5
D511	B-7
D512	B-7
D513	E-7
D551	B-5
D701	G-2
D702	G-2
D703	G-2
D704	G-2
D705	F-2
D706	F-2
D707	F-2
D708	G-3
D709	G-5
D710	F-3
D711	F-4
D712	F-3
D713	E-1
D714	E-3
D715	F-4
D801	D-2
D802	D-2
IC501	C-9
IC502	F-9
IC503	D-6
IC504	C-5
IC505	D-5
IC506	A-9
IC507	C-7
IC508	B-4
IC509	C-4
IC510	B-6
IC511	F-10
IC512	D-9
IC601	A-3
IC701	G-4
IC801	B-2
IC802	D-2
Q101	A-8
Q102	B-8
Q103	E-8
Q121	F-6
Q122	D-7
Q201	A-8
Q202	B-10
Q203	E-9
Q221	F-6
Q222	D-7
Q503	E-8
Q511	B-6
Q512	B-7
Q521	F-7
Q531	B-5
Q532	B-5
Q551	A-5
Q572	F-7
Q573	C-7
Q601	B-3
Q701	G-6
Q702	G-5
Q704	G-4
Q705	F-3
Q707	F-3
Q708	F-2
Q805	D-2

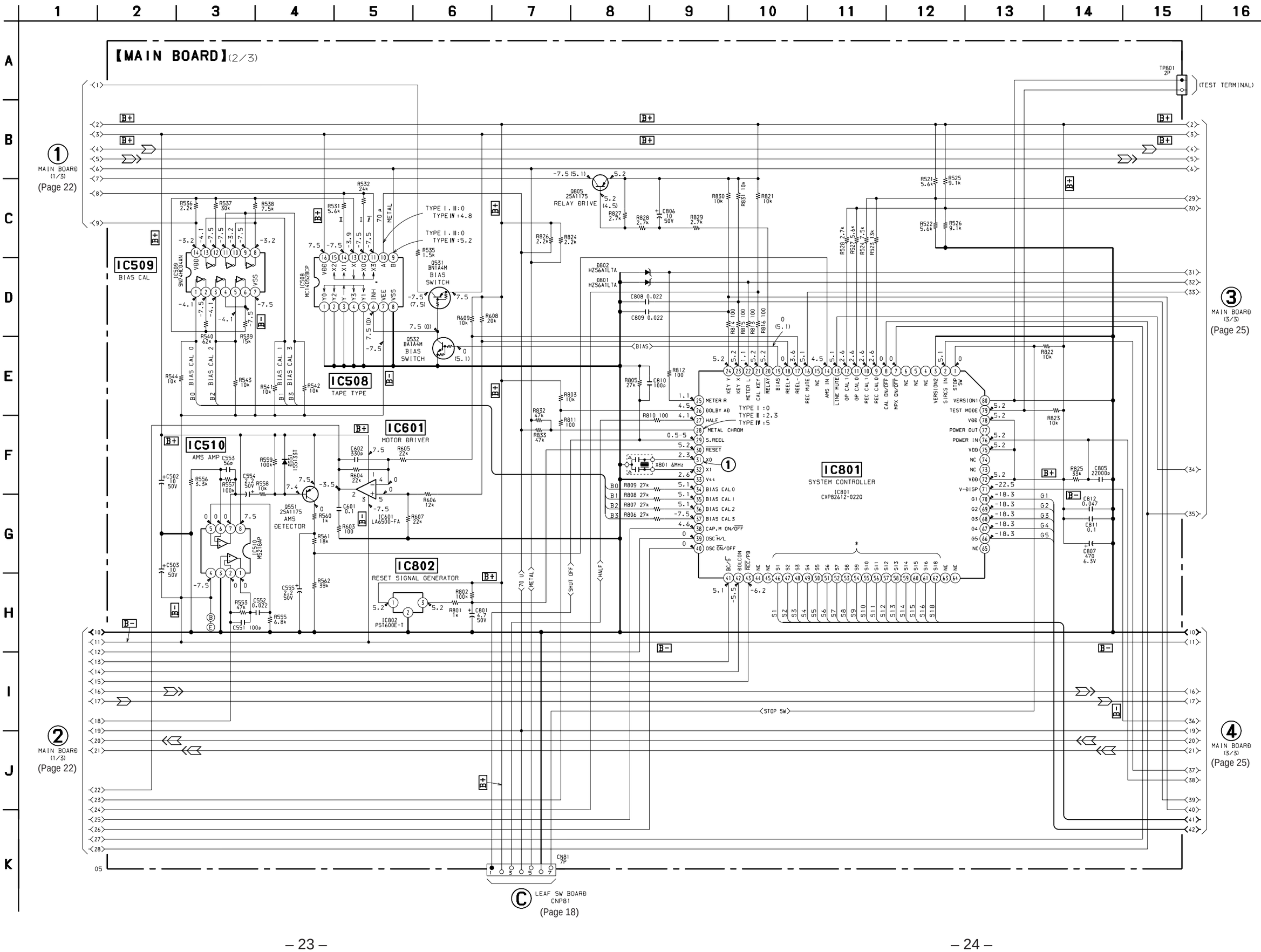


5-5. SCHEMATIC DIAGRAM – MAIN Section – (1/3)



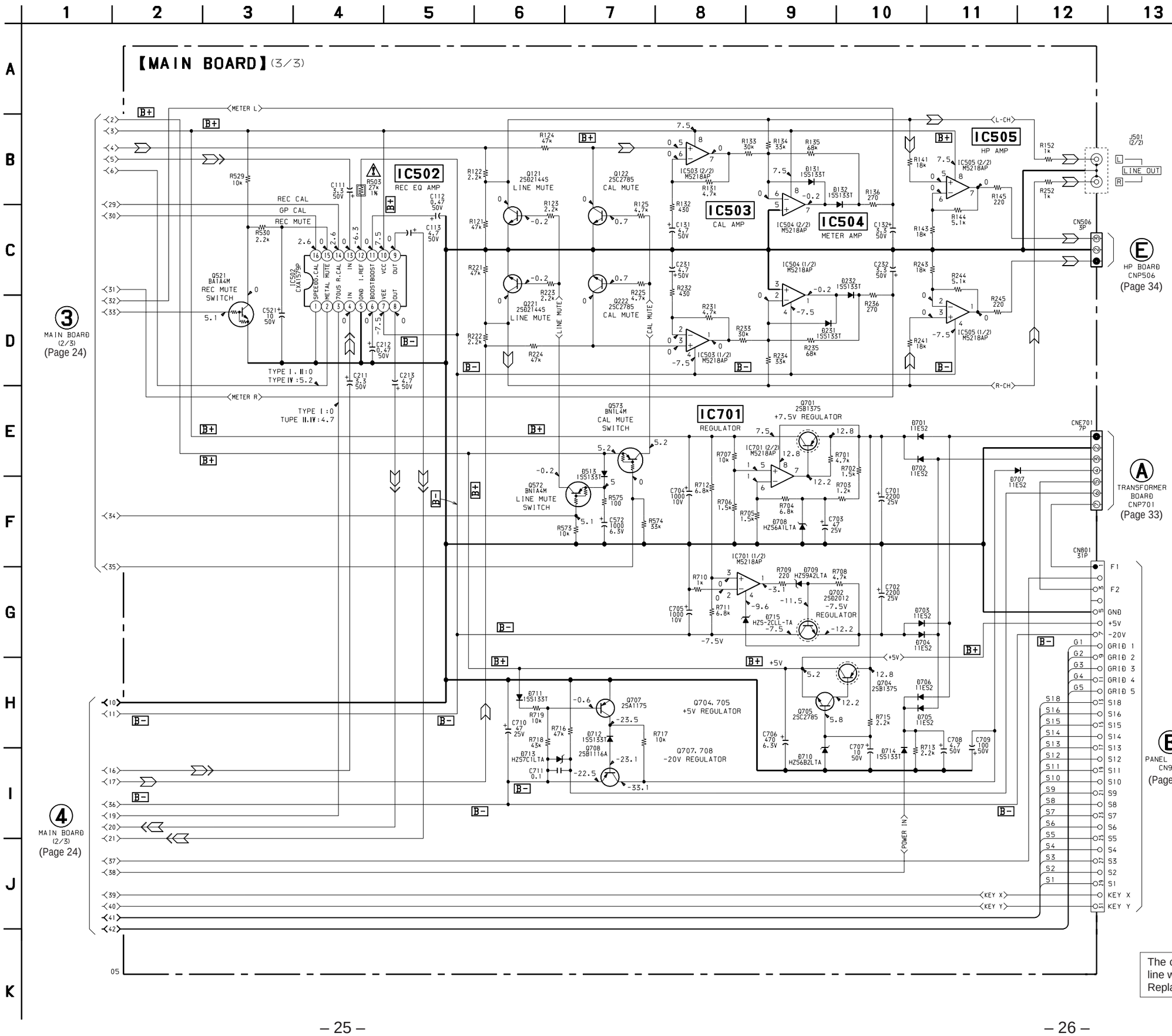
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-6. SCHEMATIC DIAGRAM – MAIN Section – (2/3) • See page 27 for Waveforms.



5-7. SCHEMATIC DIAGRAM – MAIN Section – (3/3) • See page 28 for IC Block Diagrams.

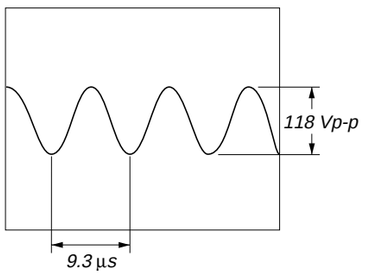
【MAIN BOARD】(3/3)



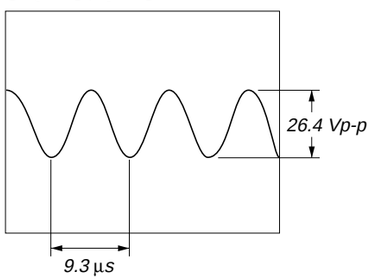
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

• Waveforms
– AUDIO BOARD –

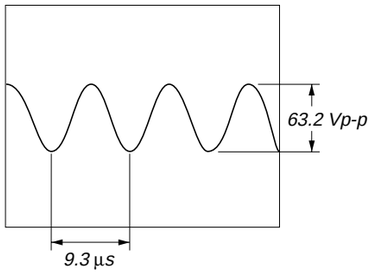
❶ T51 ①



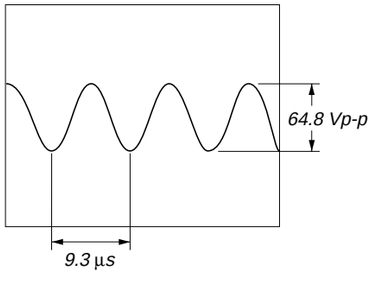
❷ Q51 Ⓒ, Q52 Ⓒ



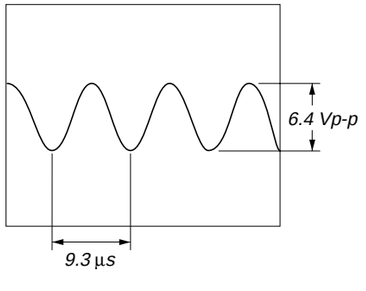
❸ T81 ④



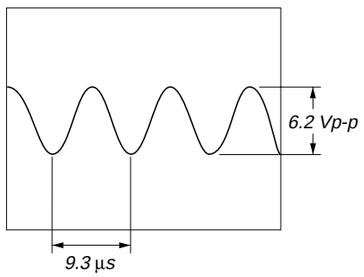
❹ T91 ④



❺ IC81 ⑦, ⑧

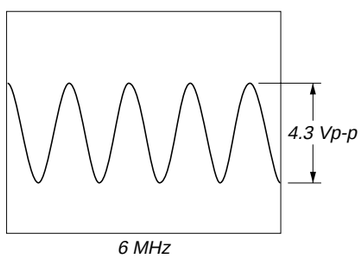


❻ IC81 ⑪, ⑫



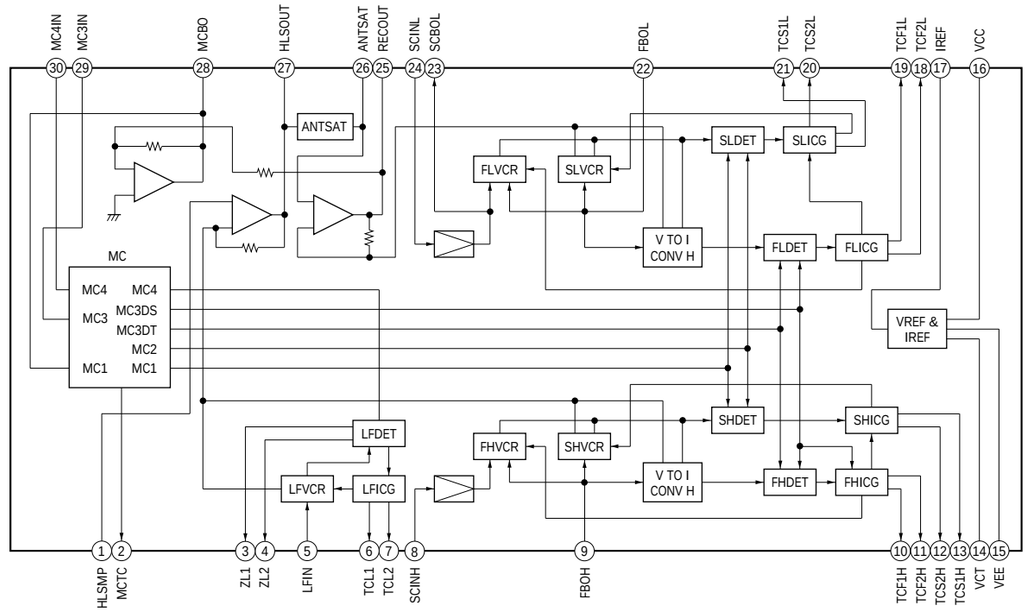
– MAIN BOARD (2/3) –

❶ IC801 ㉛

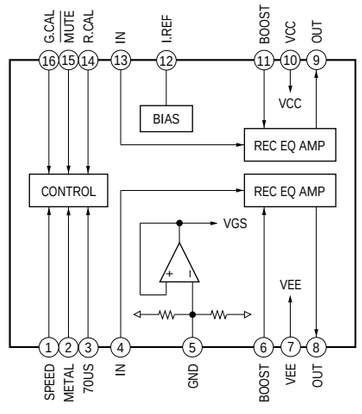


• IC Block Diagrams

IC1 CXA1917AM-T6 (DOLBY-S BOARD)

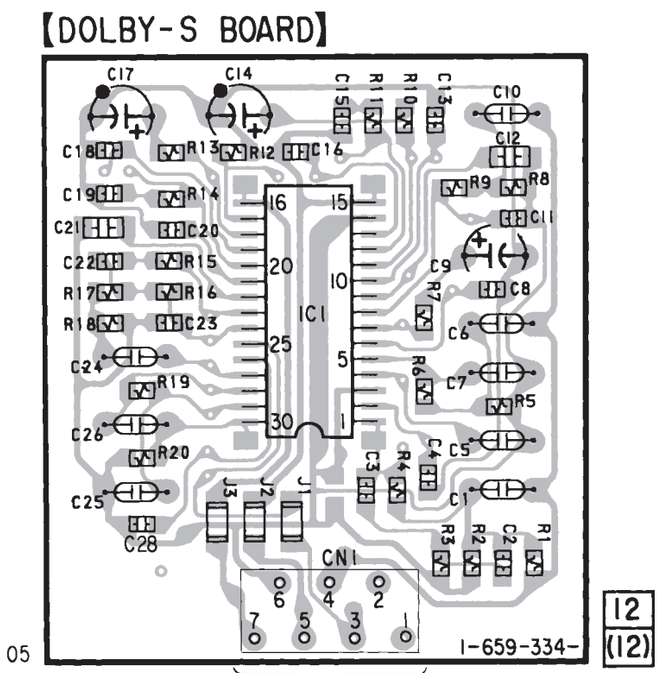


IC502 CXA1579P (MAIN BOARD)



5-8. PRINTED WIRING BOARD – DOLBY-S Section –

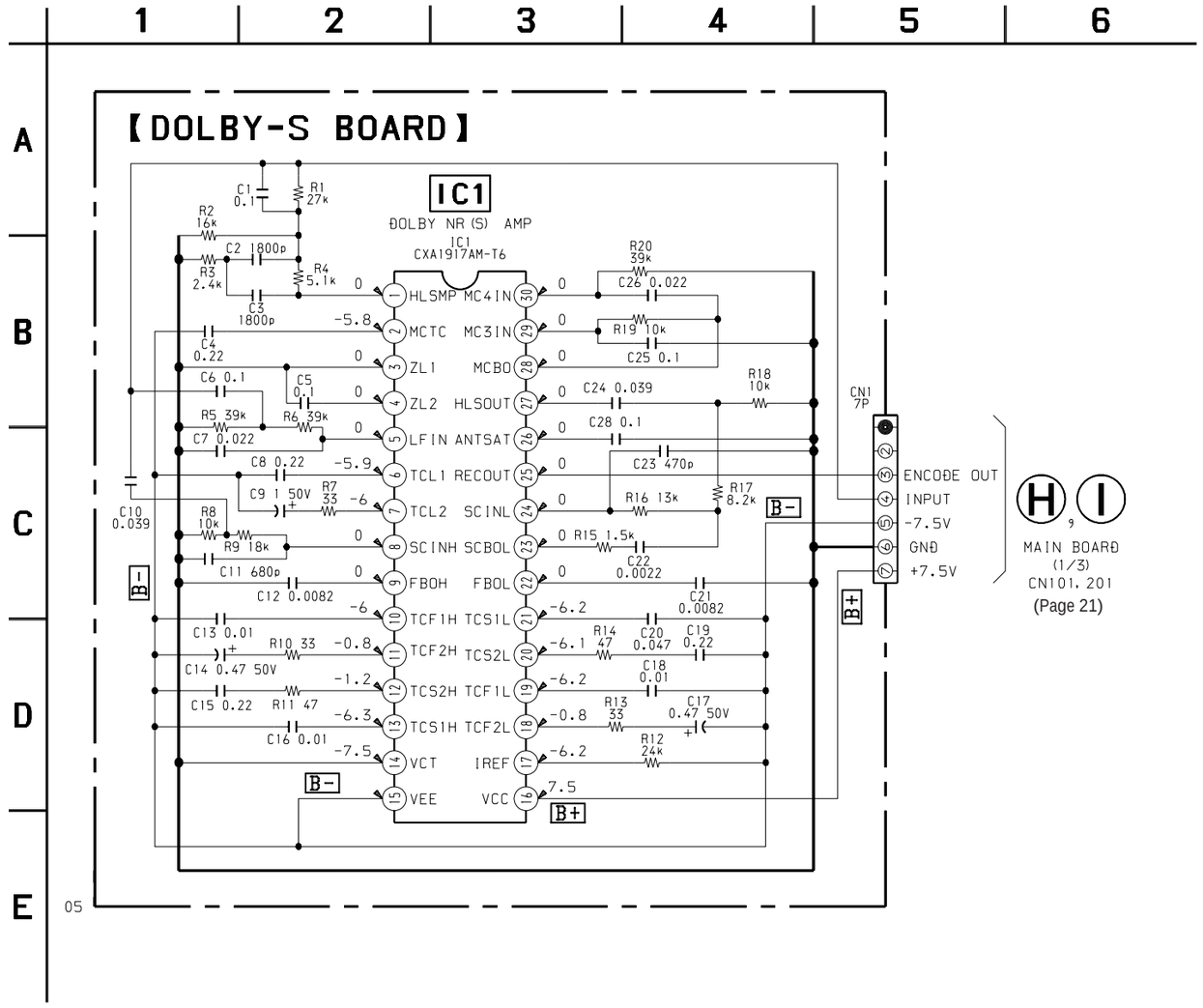
• See page 13 for Circuit Boards Location.



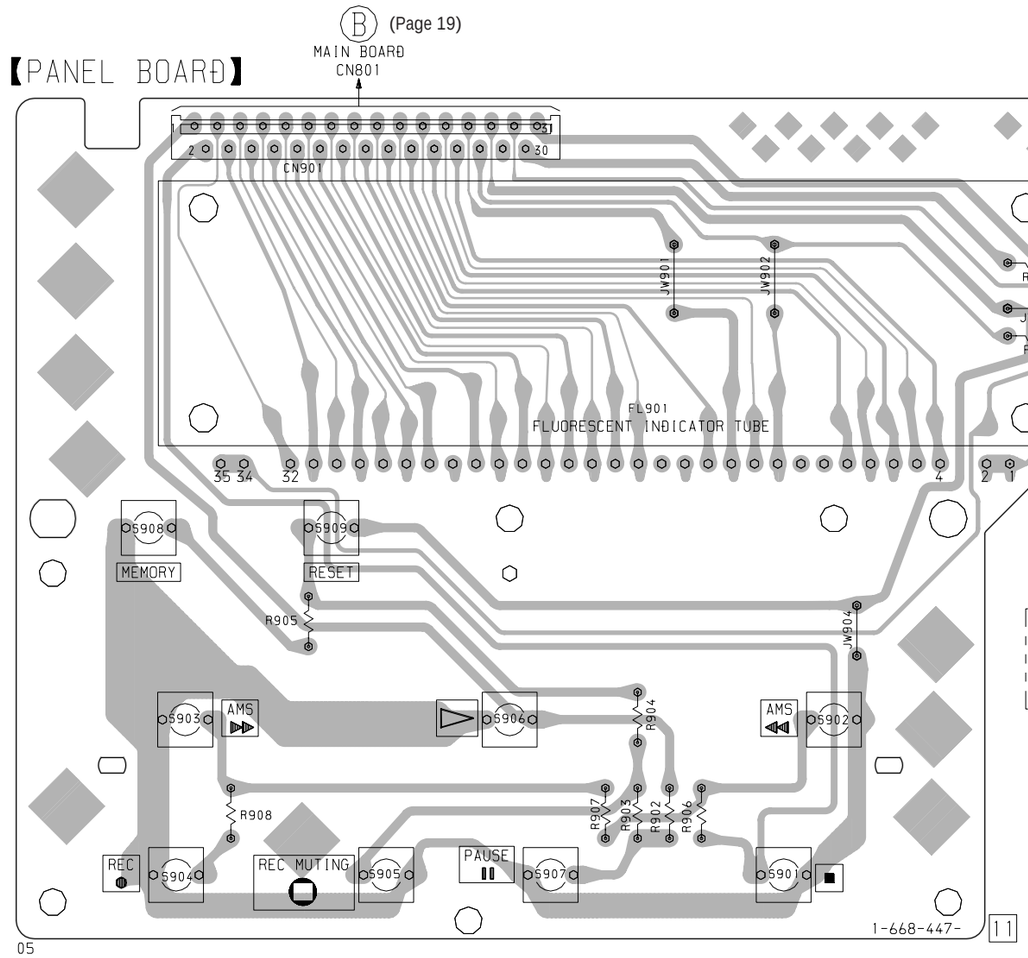
H, I
MAIN BOARD
CN101 , 201
(Page 20)

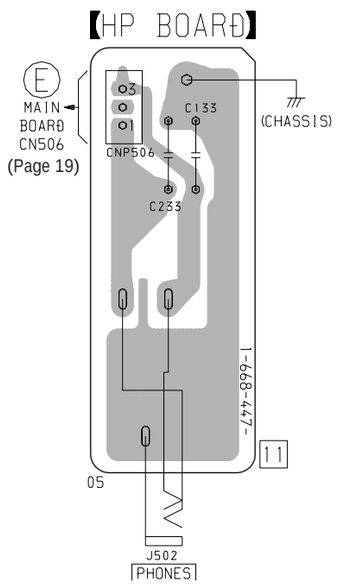
5-9. SCHEMATIC DIAGRAM – DOLBY-S Section –

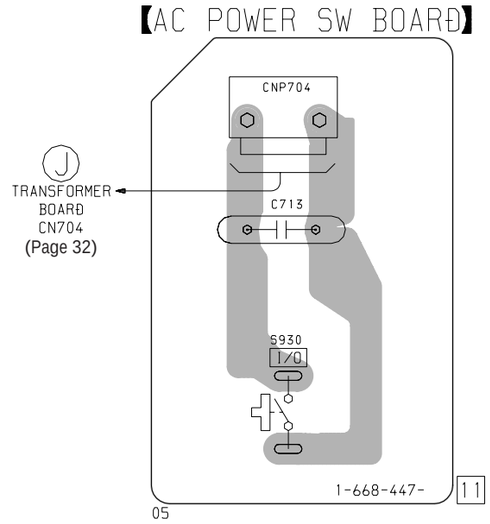
• See page 28 for IC Block Diagrams.

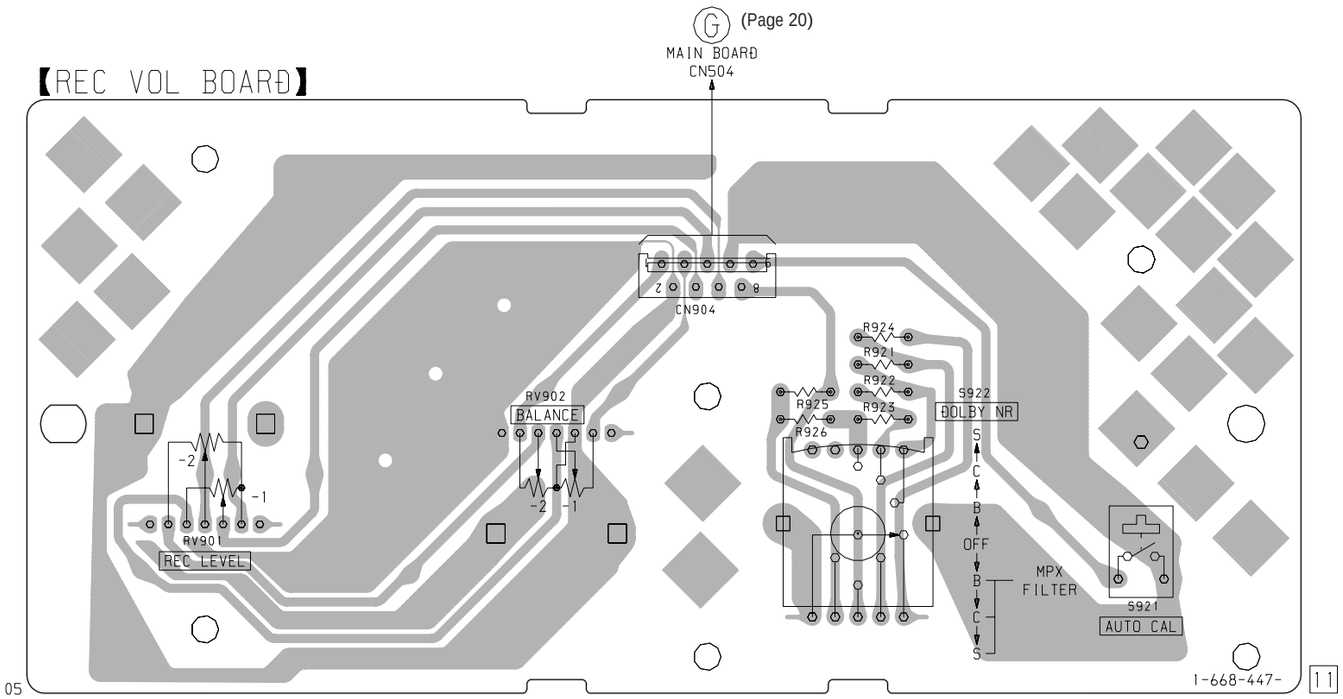


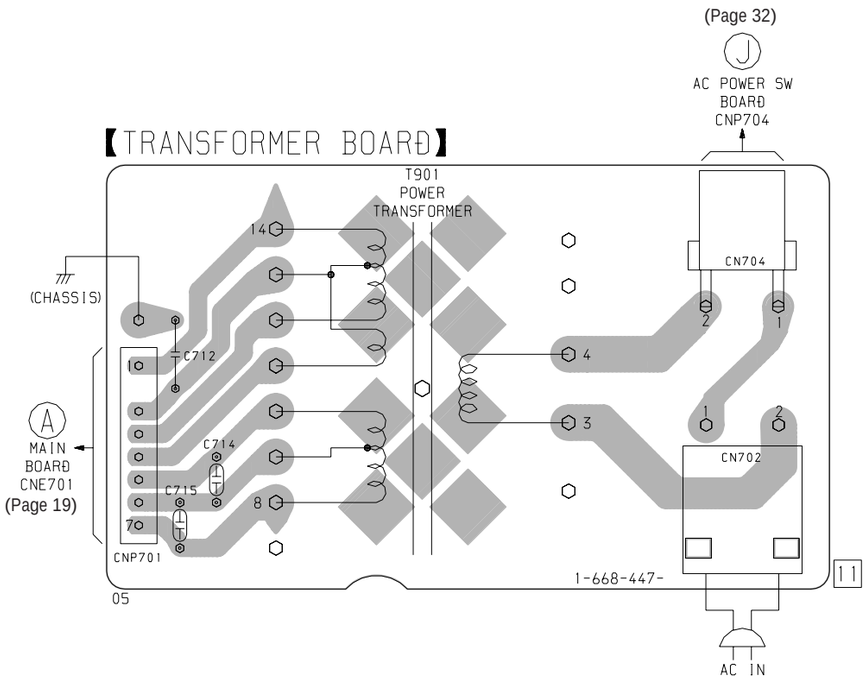
5-10. PRINTED WIRING BOARDS – PANEL Section – • See page 13 for Circuit Boards Location.



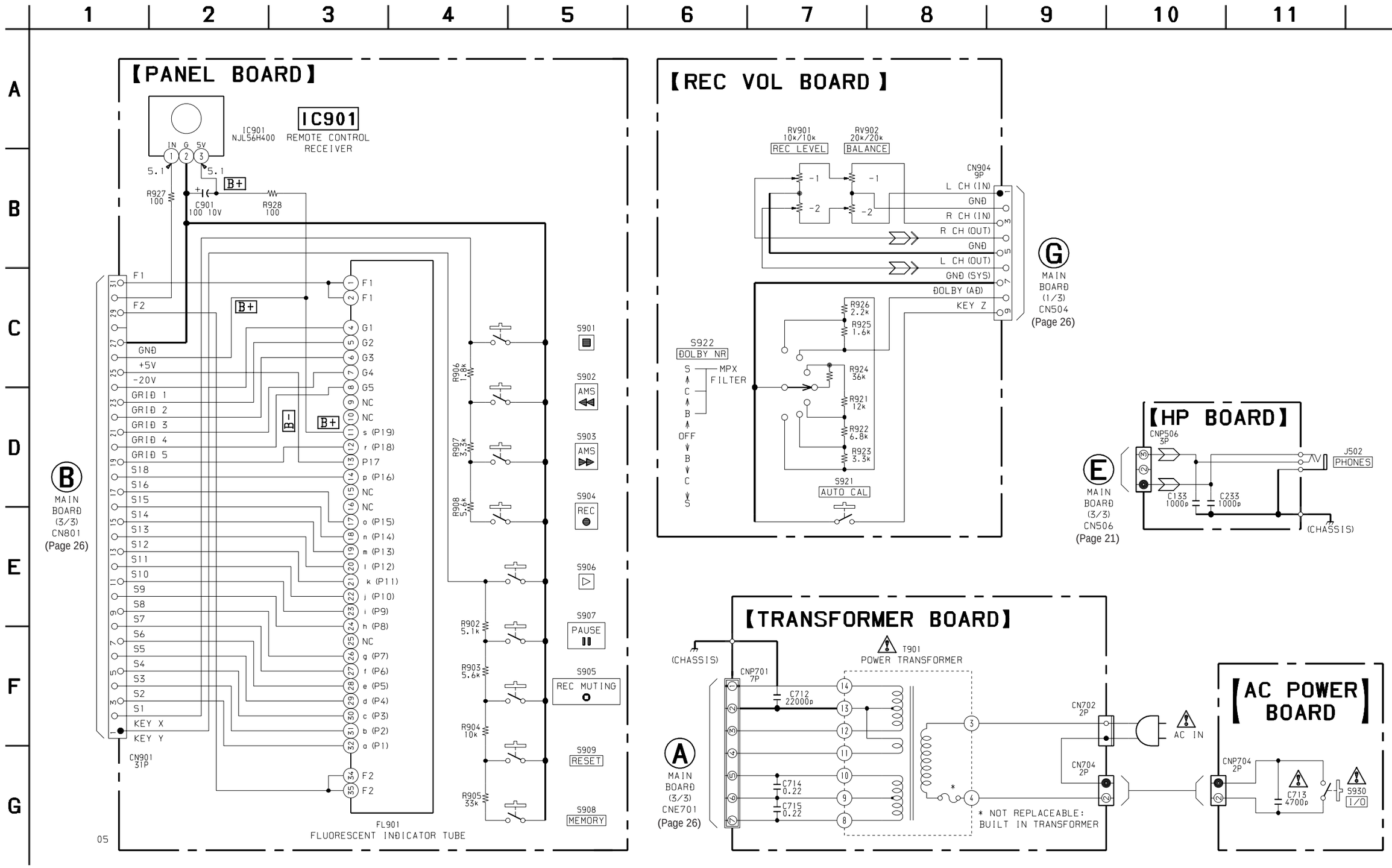








5-11. SCHEMATIC DIAGRAM – PANEL Section –



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-12. IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC801 CXP82612-022Q (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1	STOP SW	I	Mechanism stop detect switch (S81) input terminal
2	SIRCS IN	I	Sircs signal input from the remote control receiver (IC901)
3	VERSION2	I	Setting terminal for the version (fixed at "L")
4 to 6	NC	O	Not used (open)
7	MPX ON/$\overline{\text{OFF}}$	O	Multiplex filter on/off control signal output terminal "H": multiplex filter on
8	CAL ON/$\overline{\text{OFF}}$	O	Calibration on/off control signal output terminal "H": calibration on
9	REC CAL 0	O	Recording calibration up/down control signal output to the CXA1579P (IC502) "H": up, "L": down (high impedance: off)
10	REC CAL 1	O	
11	GP CAL 0	O	Equalizer calibration up/down control signal output to the CXA1579P (IC502) "H": up, "L": down (high impedance: off)
12	GP CAL 1	O	
13	$\overline{\text{LINE MUTE}}$	O	Line muting on/off control signal output terminal "L": line muting on
14	AMS IN	I	Auto music sensor signal input terminal "H": AMS detect
15	NC	O	Not used (open)
16	REC MUTE	O	Record muting on/off control signal output to the CXA1579P (IC502) "H": record muting on
17	REEL –	O	Reel motor (M901) drive signal output terminal
18	REEL +	O	
19	BIAS	O	Recording bias on/off control signal output terminal "H": bias on
20	$\overline{\text{RELAY}}$	O	Relay drive signal output for the record/playback selection relay "L": playback mode, "H": recording mode
21	CAL KEY	I	AUTO CAL switch (S921) input terminal
22	METER L	I	Signal input for the level meter drive (L-ch)
23	KEY X	I	Key input terminal (A/D input) (S901 to S904) ■, AMS ◀◀, AMS ▶▶, ● REC keys input
24	KEY Y	I	Key input terminal (A/D input) (S905 to S909) ⭘ REC MUTING, ▷, ▮▮ PAUSE, MEMORY, RESET keys input
25	METER R	I	Signal input for the level meter drive (R-ch)
26	DOLBY AD	I	DOLBY NR switch (S922) input terminal (A/D input)
27	HALF	I	Half detect switch (S86) input terminal
28	METAL CHROM	I	Metal detect switch (S83) and CrO_2 detect switch (S82) input terminal "H": metal or CrO_2
29	S.REEL	I	Supply reel rotation pulse input from the rotation detect sensor (IC81)
30	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC802) "L": reset "L" is input for several 100 msec after power on, then it changes to "H"
31	XO	O	System clock output terminal (6 MHz)
32	XI	I	System clock input terminal (6 MHz)
33	VSS	—	Ground terminal
34	BIAS CAL 0	O	Equalizer bias calibration control signal output terminal
35	BIAS CAL 1	O	
36	BIAS CAL 2	O	
37	BIAS CAL 3	O	
38	CAP.M ON/$\overline{\text{OFF}}$	O	Capstan motor (M902) on/off control signal output terminal "H": motor on
39	OSC $\overline{\text{H}}$/L	O	Calibration tone frequency high/low control signal output terminal "L": frequency high
40	OSC $\overline{\text{ON}}$/OFF	O	Calibration tone on/off control signal output terminal "H": off, "L": on
41	BC/$\overline{\text{S}}$	O	Dolby B and C type or dolby S type selection signal output to the CXA1563S (IC501) "H": dolby B and C type, "L": dolby S type
42	DOLCON	O	Dolby B type or dolby C type selection signal output to the CXA1563S (IC501) "H": dolby C type, "L": dolby off (high impedance: dolby B type)

Pin No.	Pin Name	I/O	Function
43	$\overline{\text{REC}}$/PB	O	Recording/playback control signal output to the CXA1563S (IC501) "L": recording mode, "H": playback mode
44, 45	NC	O	Not used (open)
46 to 61	S1 to S16	O	Segment drive signal output to the fluorescent indicator tube (FL901)
62	S18	O	Segment drive signal output to the fluorescent indicator tube (FL901)
63 to 65	NC	O	Not used (open)
66 to 70	G5 to G1	O	Grid drive signal output to the fluorescent indicator tube (FL901)
71	V-DISP	—	Power supply terminal for the fluorescent indicator tube drive (–20V)
72	VDD	—	Power supply terminal (+5V)
73, 74	NC	O	Not used (open)
75	VDD	—	Power supply terminal (+5V)
76	POWER IN	I	AC in detect signal input terminal "H": AC in
77	POWER OUT	O	Power on/off control signal output terminal "L": power on Not used (open)
78	VDD	—	Power supply terminal (+5V)
79	TEST MODE	I	Setting terminal for the test mode "L": test mode (Normally: fixed at "H")
80	VERSION1	I	Setting terminal for the version (fixed at "L")

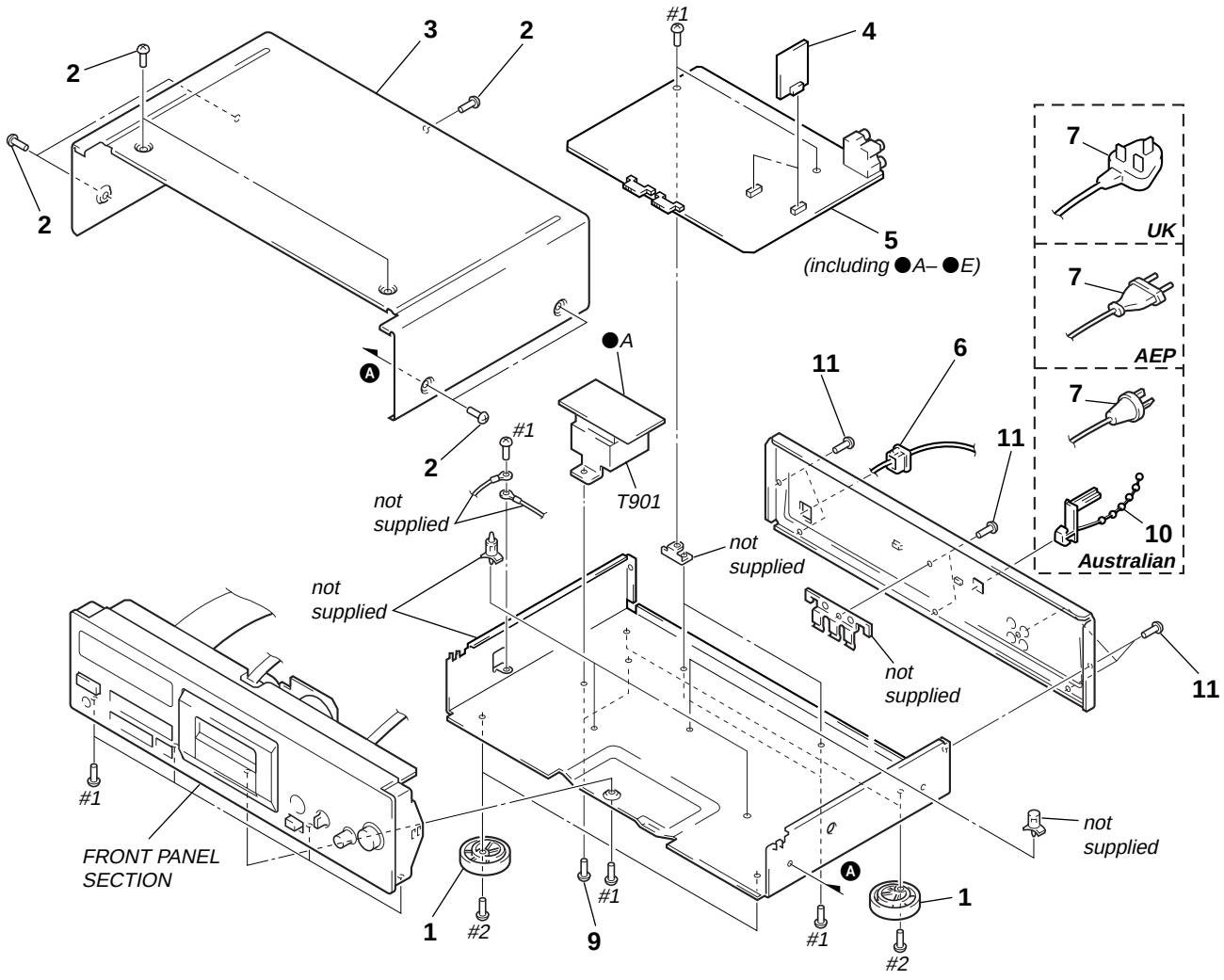
SECTION 6
EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

(1) CASE, CHASSIS SECTION

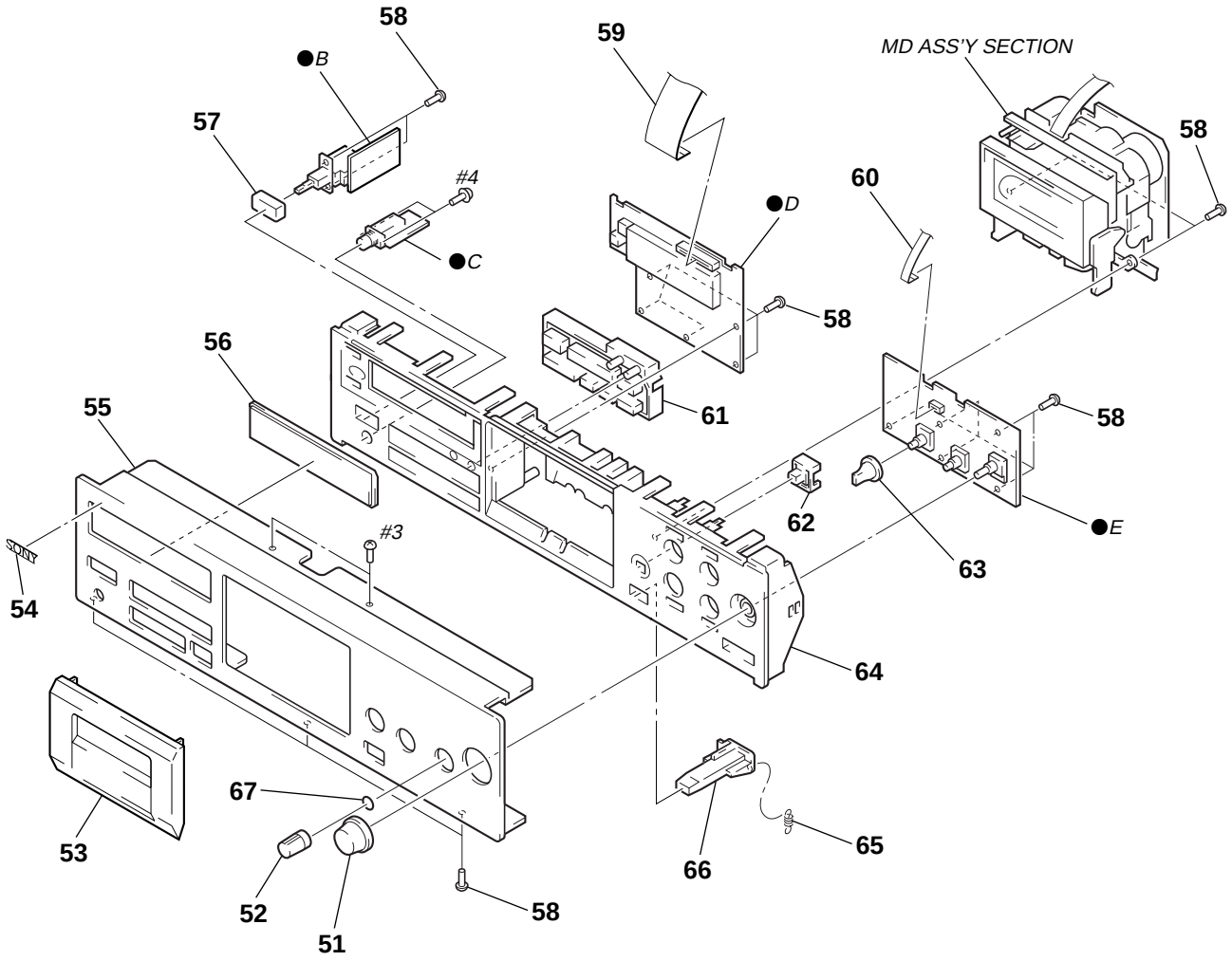
●*A: TRANSFORMER board*



Ref. No.	Part No.	Description	Remark
1	X-4949-523-1	FOOT ASSY (F50180S)	
2	3-710-901-11	SCREW, TAPPING	
* 3	3-021-377-01	CASE	
* 4	A-2007-481-A	DOLBY-S BOARD, COMPLETE	
* 5	A-2007-779-A	MAIN BOARD, COMPLETE	
6	4-966-267-11	BUSHING (FBS001), CORD	
⚠7	1-575-651-21	CORD, POWER (AEP)	
⚠7	1-696-586-11	CORD, POWER (UK)	
⚠7	1-696-845-11	CORD, POWER (Australian)	
* 8	3-020-983-01	PANEL, BACK (AEP)	
* 8	3-020-983-11	PANEL, BACK (UK)	
* 8	3-020-983-22	PANEL, BACK (Australian)	
9	3-703-249-21	SCREW, S TIGHT, +PTTWH (M3X8)	
10	4-956-370-12	BAND, PLUG FIXED (UK, Australian)	
11	3-704-515-21	SCREW (BV/RING)	
⚠T901	1-427-751-11	TRANSFORMER, POWER	

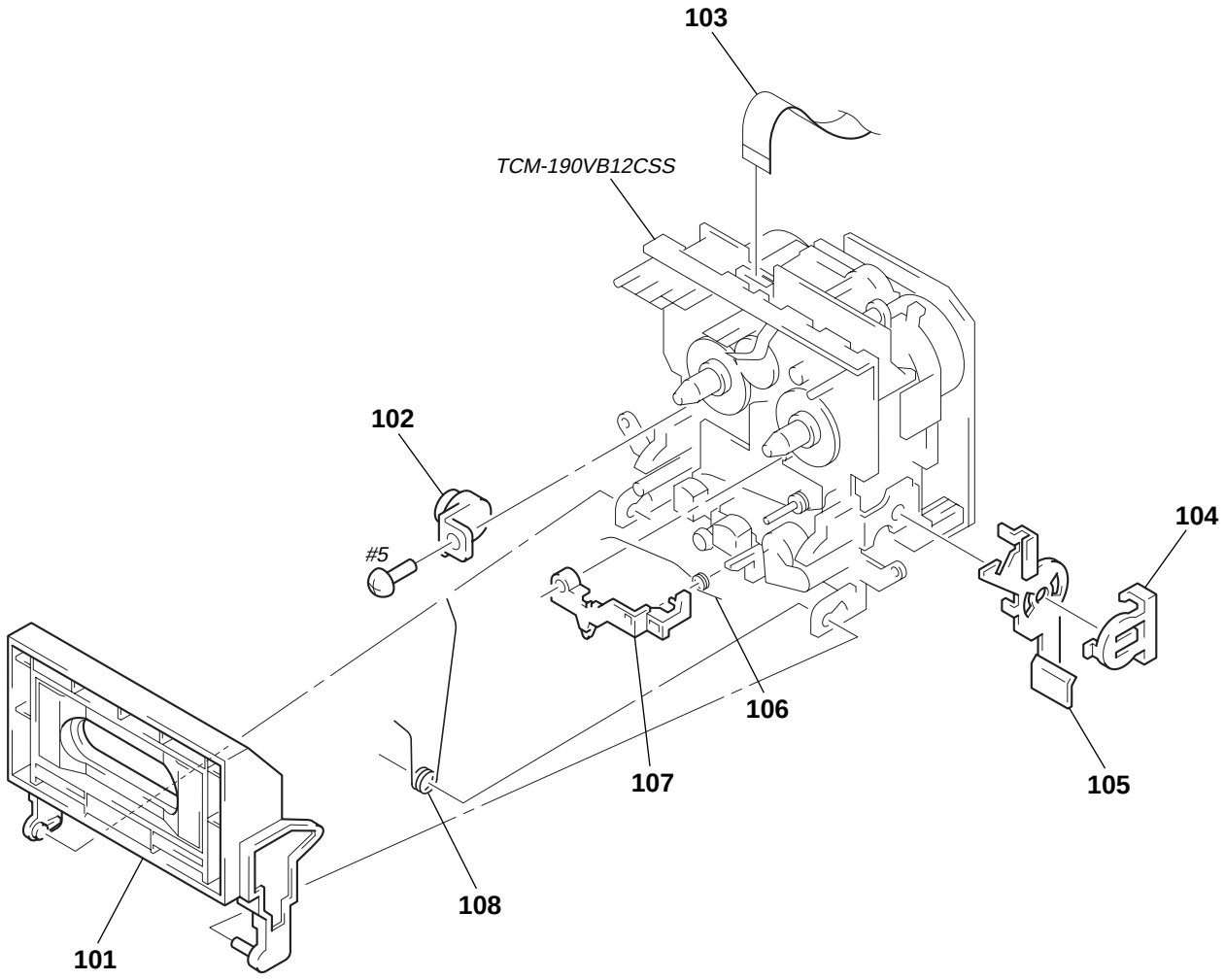
(2) FRONT PANEL SECTION

●*B: AC POWER SW board*
●*C: HP board*
●*D: PANEL board*
●*E: REC VOL board*



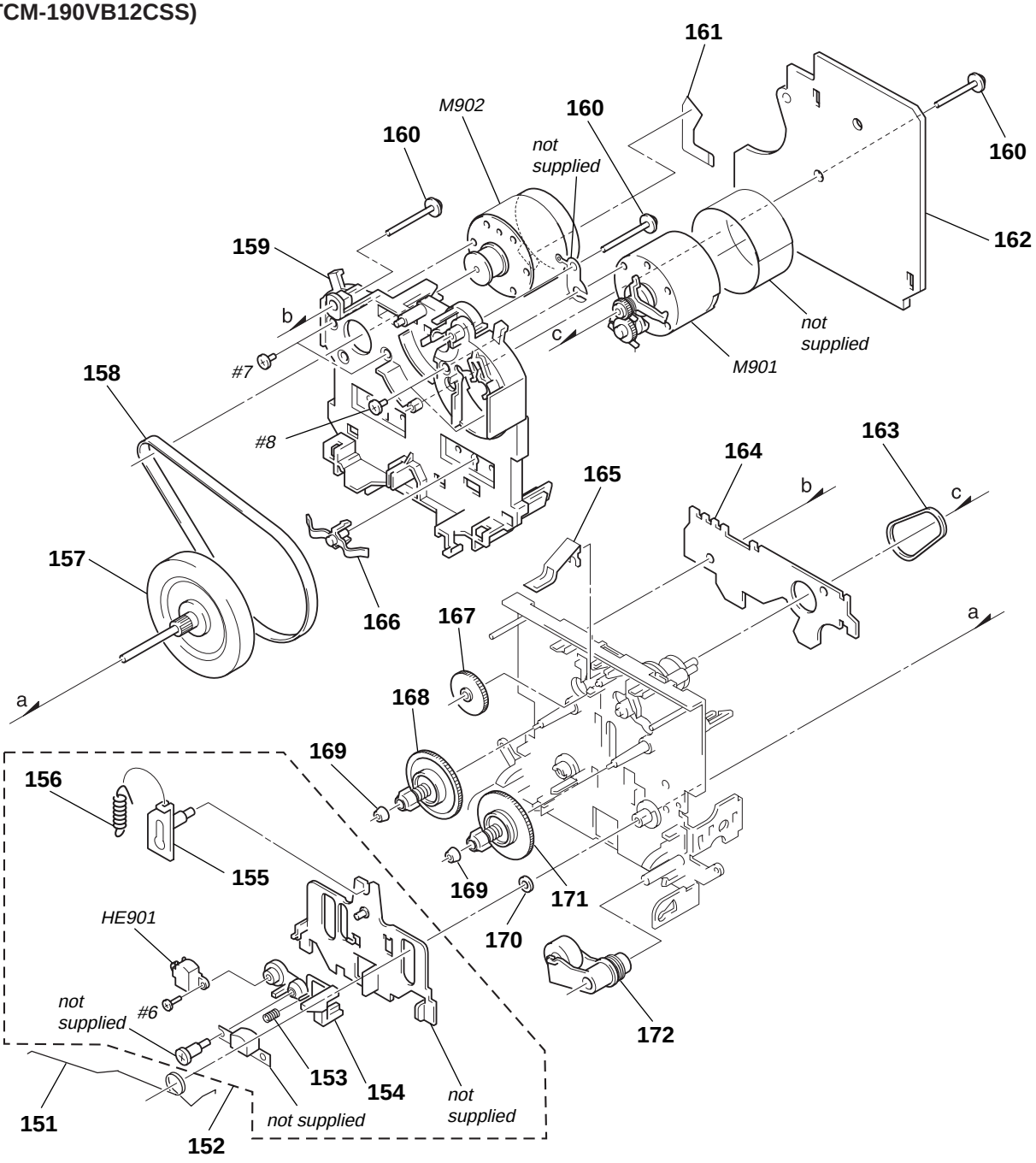
Ref. No.	Part No.	Description	Remark
51	3-020-978-01	KNOB (REC)	
52	3-020-979-01	KNOB (BALANCE)	
53	X-3374-953-1	LID ASSY, CASSETTE	
54	4-942-568-41	EMBLEM (NO.5), SONY	
55	3-020-971-01	PANEL, FRONT (AEP,UK)	
55	3-020-971-21	PANEL, FRONT (Australian)	
56	3-020-980-01	WINDOW (METER)	
57	4-922-921-62	BUTTON (POWER)	
58	4-951-620-01	SCREW (2.6X8), +BVTP	
59	1-696-456-11	WIRE (FLAT TYPE) (31 CORE)	
60	1-590-486-11	WIRE (FLAT TYPE) (7 CORE)	
61	3-020-975-01	BUTTON (CONTROL)	
62	3-020-977-01	BUTTON (AUTO CAL)	
63	3-933-299-01	KNOB (DIA. 12)	
64	X-3375-506-1	BASE (KB820S) ASSY, PANEL	
65	3-937-169-01	SPRING, TENSION	
66	3-020-976-01	BUTTON (EJECT)	
67	3-354-981-11	SPRING (SUS), RING	

(13) MD ASS'Y SECTION



Ref. No.	Part No.	Description	Remark
101	X-3368-119-1	HOLDER (R) ASSY, CASSETTE	
102	3-354-963-01	DAMPER	
103	1-769-914-11	WIRE (FLAT TYPE) (9 CORE)	
104	3-354-957-01	JOINT (LOCK LEVER)	
* 105	3-354-954-01	LEVER (LOCK LEVER R)	
106	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
107	3-354-956-01	LEVER (EJ SAFTY LEVER R)	
108	3-354-960-01	SPRING (LOADING R), TORSION	

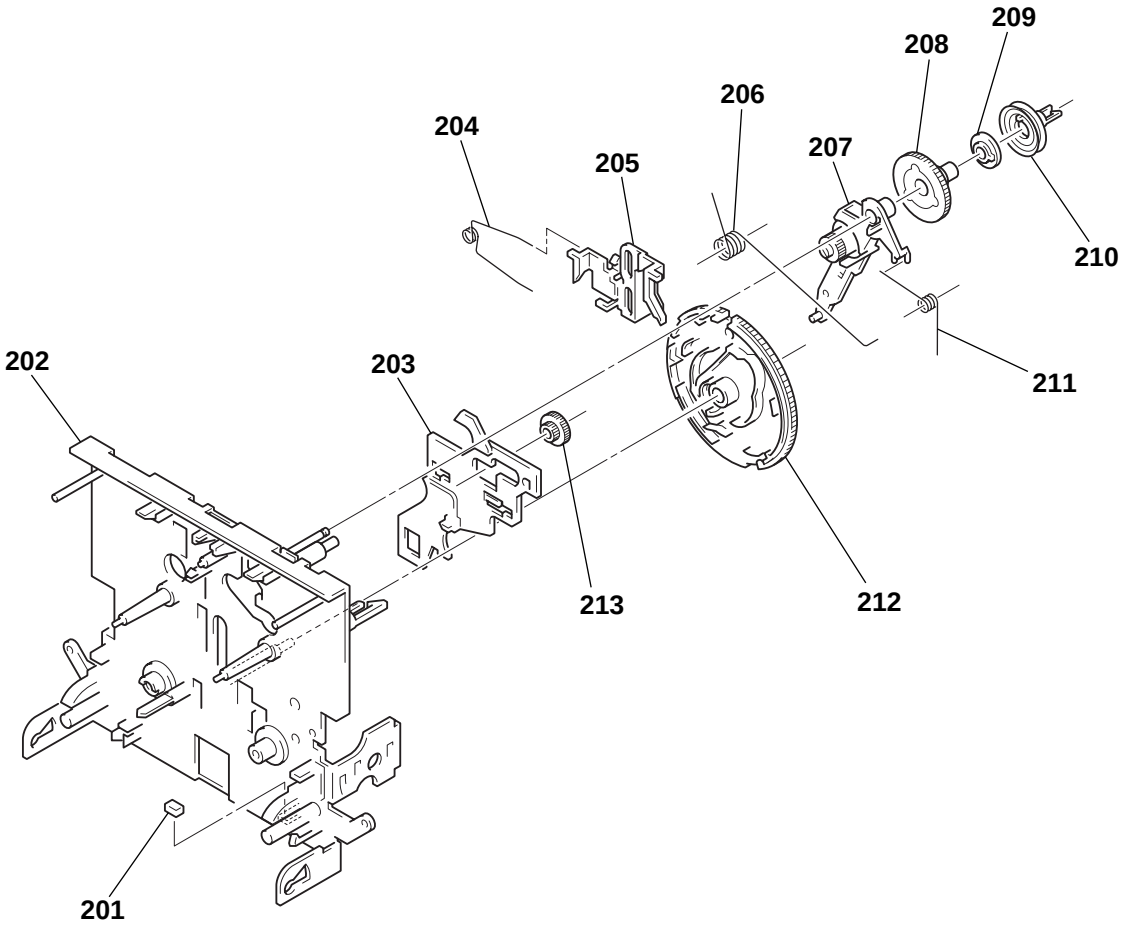
(4) MECHANISM DECK SECTION-1 (TCM-190VB12CSS)



Ref. No.	Part No.	Description	Remark
151	3-907-362-01	SPRING, TORSION	
152	A-2004-673-A	DECK (ONE) ASSY, HEAD (including HRP901)	
153	3-343-484-01	SPRING, COMPRESSION	
* 154	3-359-445-11	HOLDER (1 WAY HEAD)	
155	X-3374-992-1	SLIDER (LIMITER) ASSY	
156	3-363-868-01	SPRING (HEAD CHASSIS), TENSION	
157	X-3367-629-1	FLYWHEEL (FWD) ASSY	
158	3-359-467-01	BELT (1 WAY FLAT BELT)	
159	3-359-436-11	BASE (THRUST RETAINER), FITTING	
160	3-359-414-01	SCREW (+PTPWH 2X23)	
161	1-638-983-11	MOTOR FLEXIBLE BOARD	
* 162	A-2007-780-A	AUDIO BOARD, COMPLETE	
163	3-359-466-01	BELT (FR), SQUARE	

Ref. No.	Part No.	Description	Remark
* 164	1-638-020-11	LEAF SW BOARD	
165	3-359-430-01	SPRING (CASSETTE RETAINER), LEAF	
166	3-575-321-00	RETAINER, THRUST, CAPSTAN	
167	3-359-424-01	GEAR (REV GEAR)	
168	X-3366-971-1	TABLE ASSY (B), REEL	
169	3-362-308-01	CAP (REEL)	
170	3-356-713-01	WASHER	
171	X-3366-970-1	TABLE ASSY, REEL	
172	X-3366-047-1	LEVER (PINCH F) ASSY	
HE901	1-543-673-11	HEAD, MAGNETIC (ERASE)	
M901	X-3363-501-2	MOTOR ASSY (REEL)	
M902	X-3374-302-1	MOTOR ASSY (CAPSTAN)	

(5) MECHANISM DECK SECTION-2 (TCM-190VB12CSS)



Ref. No.	Part No.	Description	Remark
201	3-359-469-01	SPACER	
202	X-3359-416-1	CHASSIS ASSY, MECHANICAL	
* 203	3-359-415-01	SLIDER (TRIGGER SLIDER)	
204	3-359-454-01	SPRING, TORSION	
205	3-359-429-01	SLIDER (BRAKE PLATE)	
206	3-359-456-01	SPRING (TRIGGER SPRING), TORSION	
207	X-3366-569-1	ARM ASSY, FR	
208	3-359-419-11	GEAR (FR GEAR)	
209	3-359-421-01	CLUTCH (REEL DISK)	
210	3-359-418-01	PULLEY (FR PULLEY)	
211	3-924-185-11	SPRING (FR ARM), TORSION	
212	3-936-483-01	GEAR (CAM GEAR)	
213	3-359-448-01	GEAR (TRIGGER)	

AC POWER SW

AUDIO

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
		AC POWER SW BOARD			
		**********			
		(Included in MAIN BOARD, COMPLETE)			
		< CAPACITOR >			
⚠C713	1-117-703-11	CERAMIC	0.0047uF	99%	250V
		< SWITCH >			
⚠S930	1-762-581-11	SWITCH, AC POWER PUSH (1 KEY) (I/O)			
**********					
*	A-2007-780-A	AUDIO BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C11	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C12	1-136-157-00	FILM	0.022uF	5%	50V
C13	1-124-234-00	ELECT	22uF	20%	16V
C18	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C21	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C22	1-136-157-00	FILM	0.022uF	5%	50V
C23	1-124-234-00	ELECT	22uF	20%	16V
C28	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C31	1-124-234-00	ELECT	22uF	20%	16V
C32	1-124-234-00	ELECT	22uF	20%	16V
C33	1-124-234-00	ELECT	22uF	20%	16V
C51	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C52	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C53	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C54	1-136-601-11	FILM	0.01uF	5%	630V
C56	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C57	1-164-346-11	CERAMIC CHIP	1uF		16V
C71	1-164-346-11	CERAMIC CHIP	1uF		16V
C80	1-124-234-00	ELECT	22uF	20%	16V
C81	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C82	1-136-157-00	FILM	0.022uF	5%	50V
C83	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C84	1-136-439-11	FILM	330PF	5%	630V
C85	1-136-433-11	FILM	100PF	5%	630V
C86	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C87	1-136-273-00	FILM	75PF	5%	630V
C88	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C89	1-124-234-00	ELECT	22uF	20%	16V
C90	1-107-584-11	CERAMIC	4PF	0.25PF	500V
C91	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C92	1-136-157-00	FILM	0.022uF	5%	50V
C93	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C94	1-136-439-11	FILM	330PF	5%	630V
C95	1-136-433-11	FILM	100PF	5%	630V
C96	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C97	1-136-273-00	FILM	75PF	5%	630V
C98	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C99	1-164-005-11	CERAMIC CHIP	0.47uF		25V
		< CONNECTOR >			
* CNP31	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNP32	1-580-781-11	PIN, CONNECTOR (PC BOARD) 7P			
* CNP33	1-580-782-11	CONNECTOR, BOARD TO BOARD			
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP72	1-764-902-11	CONNECTOR, FFC/FPC 4P			
		< DIODE >			
D31	8-719-404-46	DIODE MA110			
		< IC >			
IC31	8-759-711-85	IC NJM4580E-D			
IC81	8-759-106-56	IC uPC1297CA			
		< COIL >			
L81	1-410-780-11	INDUCTOR 27mH			
L91	1-410-780-11	INDUCTOR 27mH			
		< TRANSISTOR >			
Q51	8-729-822-05	TRANSISTOR 2SD1622-ST-TD			
Q52	8-729-822-05	TRANSISTOR 2SD1622-ST-TD			
Q53	8-729-822-05	TRANSISTOR 2SD1622-ST-TD			
Q71	8-729-602-36	TRANSISTOR 2SA1602			
		< RESISTOR >			
R11	1-216-086-00	RES, CHIP	36K	5%	1/10W
R12	1-216-025-00	RES, CHIP	100	5%	1/10W
R13	1-216-100-00	RES, CHIP	130K	5%	1/10W
R14	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R21	1-216-086-00	RES, CHIP	36K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R22	1-216-025-00	RES, CHIP	100	5%	1/10W
R23	1-216-100-00	RES, CHIP	130K	5%	1/10W
R24	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R31	1-216-033-00	METAL CHIP	220	5%	1/10W
R32	1-216-033-00	METAL CHIP	220	5%	1/10W
R33	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R51	1-216-091-00	METAL CHIP	56K	5%	1/10W
R52	1-216-091-00	METAL CHIP	56K	5%	1/10W
R53	1-216-073-00	METAL CHIP	10K	5%	1/10W
R54	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R55	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R57	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R71	1-216-025-00	RES, CHIP	100	5%	1/10W
R72	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R73	1-216-089-00	RES, CHIP	47K	5%	1/10W
R74	1-216-089-00	RES, CHIP	47K	5%	1/10W
R81	1-216-073-00	METAL CHIP	10K	5%	1/10W
R82	1-216-085-00	METAL CHIP	33K	5%	1/10W
R83	1-216-001-00	METAL CHIP	10	5%	1/10W
R84	1-216-101-00	METAL CHIP	150K	5%	1/10W
R85	1-216-075-00	METAL CHIP	12K	5%	1/10W
R91	1-216-073-00	METAL CHIP	10K	5%	1/10W
R92	1-216-085-00	METAL CHIP	33K	5%	1/10W
R93	1-216-001-00	METAL CHIP	10	5%	1/10W
R94	1-216-101-00	METAL CHIP	150K	5%	1/10W
R95	1-216-075-00	METAL CHIP	12K	5%	1/10W
		< VARIABLE RESISTOR >			
RV11	1-241-761-11	RES, ADJ, CARBON 1K			
RV12	1-241-761-11	RES, ADJ, CARBON 1K			
RV71	1-241-761-11	RES, ADJ, CARBON 1K			
RV72	1-241-762-11	RES, ADJ, CARBON 2.2K			
RV81	1-241-786-11	RES, ADJ, CARBON 22K			
RV91	1-241-786-11	RES, ADJ, CARBON 22K			
		< RELAY >			
RY31	1-515-913-11	RELAY			
		< TRANSFORMER >			
T51	1-433-383-11	TRANSFORMER, BIAS OSCILLATION			
T81	1-433-398-11	TRANSFORMER, BIAS OSCILLATOR			
T91	1-433-398-11	TRANSFORMER, BIAS OSCILLATOR			
		< TEST PIN >			
* TP81	1-568-449-11	HOUSING, CONNECTOR (PC BOARD) 3P (TEST TERMINAL)			
**********					
*	A-2007-481-A	DOLBY-S BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C1	1-136-165-00	FILM	0.1uF	5%	50V
C2	1-163-012-00	CERAMIC CHIP	0.0018uF	10%	50V
C3	1-163-012-00	CERAMIC CHIP	0.0018uF	10%	50V
C4	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C5	1-136-165-00	FILM	0.1uF	5%	50V

Ref. No.	Part No.	Description			Remark
C6	1-136-165-00	FILM	0.1uF	5%	50V
C7	1-137-372-11	FILM	0.022uF	5%	50V
C8	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C9	1-126-301-11	ELECT	1uF	20%	50V
C10	1-137-442-11	FILM	0.039uF	5%	50V
C11	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C12	1-164-717-11	CERAMIC CHIP	0.0082uF	5%	50V
C13	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C14	1-124-465-00	ELECT	0.47uF	20%	50V
C15	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C16	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C17	1-124-465-00	ELECT	0.47uF	20%	50V
C18	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C19	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C20	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C21	1-164-717-11	CERAMIC CHIP	0.0082uF	5%	50V
C22	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C23	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C24	1-137-442-11	FILM	0.039uF	5%	50V
C25	1-136-165-00	FILM	0.1uF	5%	50V
C26	1-137-372-11	FILM	0.022uF	5%	50V
C28	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN1	1-695-092-11	SOCKET, CONNECTOR 7P			
		< IC >			
IC1	8-752-076-30	IC CXA1917AM-T6			
		< SHORT CHIP >			
J1	1-216-296-00	SHORT (CHIP) 0			
J2	1-216-296-00	SHORT (CHIP) 0			
J3	1-216-296-00	SHORT (CHIP) 0			
		< RESISTOR >			
R1	1-216-685-11	METAL CHIP	27K	0.5%	1/10W
R2	1-208-811-11	RES, CHIP	16K	2%	1/10W
R3	1-208-791-11	RES, CHIP	2.4K	2%	1/10W
R4	1-208-799-11	RES, CHIP	5.1K	2%	1/10W
R5	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R6	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R7	1-216-615-11	METAL CHIP	33	0.5%	1/10W
R8	1-208-462-41	RES, CHIP	10K	2%	1/10W
R9	1-208-812-11	RES, CHIP	18K	2%	1/10W
R10	1-216-615-11	METAL CHIP	33	0.5%	1/10W
R11	1-216-619-11	METAL CHIP	47	0.5%	1/10W
R12	1-216-684-11	METAL CHIP	24K	0.5%	1/10W
R13	1-216-615-11	METAL CHIP	33	0.5%	1/10W
R14	1-216-619-11	METAL CHIP	47	0.5%	1/10W
R15	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R16	1-216-678-11	METAL CHIP	13K	0.5%	1/10W
R17	1-216-673-11	METAL CHIP	8.2K	0.5%	1/10W
R18	1-208-462-41	RES, CHIP	10K	2%	1/10W
R19	1-208-462-41	RES, CHIP	10K	2%	1/10W
R20	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
**********					

HP | LEAF SW | MAIN

Ref. No.	Part No.	Description			Remark
		HP BOARD			
		*********			
		(Included in MAIN BOARD, COMPLETE)			
		< CAPACITOR >			
C133	1-162-294-31	CERAMIC	0.001uF	10%	50V
C233	1-162-294-31	CERAMIC	0.001uF	10%	50V
		< JACK >			
J502	1-568-519-41	JACK, LARGE TYPE (PHONES)			
**********					
*	1-638-020-11	LEAF SW BOARD			
		**********			
		< CONNECTOR >			
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P			
CNP81	1-695-368-31	PIN, CONNECTOR (PC BOARD) 7P			
		< IC >			
IC81	8-749-924-10	IC PHOTO REFLECTOR NJL5165K-B(H1)			
		< RESISTOR >			
R81	1-249-414-11	CARBON	560	5%	1/4W
R83	1-247-834-11	CARBON	1.3K	5%	1/4W
R84	1-249-417-11	CARBON	1K	5%	1/4W
R85	1-249-408-11	CARBON	180	5%	1/4W
		< SWITCH >			
S81	1-571-958-11	SWITCH, PUSH (1 KEY) (MECHANISM STOP)			
S82	1-571-281-21	SWITCH, LEAF (70u)			
S83	1-571-281-21	SWITCH, LEAF (METAL)			
S84	1-571-281-21	SWITCH, LEAF (REC)			
S86	1-571-281-21	SWITCH, LEAF (HALF)			
**********					
*	A-2007-779-A	MAIN BOARD, COMPLETE			
		**********			
		(Including AC POWER SW BOARD, HP BOARD, PANEL BOARD, REC VOL BOARD, and TRANSFORMER BOARD)			
		< CAPACITOR >			
C101	1-137-372-11	FILM	0.022uF	5%	50V
C102	1-126-963-11	ELECT	4.7uF	20%	50V
C103	1-137-368-11	FILM	0.0047uF	5%	50V
C104	1-126-964-11	ELECT	10uF	20%	50V
C105	1-136-165-00	FILM	0.1uF	5%	50V
C106	1-136-163-00	FILM	0.068uF	5%	50V
C107	1-126-965-11	ELECT	22uF	20%	50V
C108	1-126-964-11	ELECT	10uF	20%	50V
C109	1-126-964-11	ELECT	10uF	20%	50V
C110	1-126-963-11	ELECT	4.7uF	20%	50V
C111	1-126-962-11	ELECT	3.3uF	20%	50V
C112	1-126-959-11	ELECT	0.47uF	20%	50V
C113	1-126-963-11	ELECT	4.7uF	20%	50V
C114	1-137-436-11	FILM	0.0039uF	5%	50V
C115	1-137-366-11	FILM	0.0022uF	5%	50V
C116	1-136-170-00	FILM	0.27uF	5%	50V
C131	1-126-963-11	ELECT	4.7uF	20%	50V
C132	1-126-962-11	ELECT	3.3uF	20%	50V
C201	1-137-372-11	FILM	0.022uF	5%	50V
C202	1-126-963-11	ELECT	4.7uF	20%	50V
C203	1-137-368-11	FILM	0.0047uF	5%	50V
C204	1-126-964-11	ELECT	10uF	20%	50V
C205	1-136-165-00	FILM	0.1uF	5%	50V
C206	1-136-163-00	FILM	0.068uF	5%	50V
C207	1-126-965-11	ELECT	22uF	20%	50V
C208	1-126-964-11	ELECT	10uF	20%	50V
C209	1-126-964-11	ELECT	10uF	20%	50V
C210	1-126-963-11	ELECT	4.7uF	20%	50V
C211	1-126-962-11	ELECT	3.3uF	20%	50V
C212	1-126-959-11	ELECT	0.47uF	20%	50V
C213	1-126-963-11	ELECT	4.7uF	20%	50V
C214	1-137-436-11	FILM	0.0039uF	5%	50V
C215	1-137-366-11	FILM	0.0022uF	5%	50V
C216	1-136-170-00	FILM	0.27uF	5%	50V
C231	1-126-963-11	ELECT	4.7uF	20%	50V
C232	1-126-962-11	ELECT	3.3uF	20%	50V
C301	1-126-935-11	ELECT	470uF	20%	16V
C501	1-126-935-11	ELECT	470uF	20%	16V
C502	1-126-964-11	ELECT	10uF	20%	50V
C503	1-126-964-11	ELECT	10uF	20%	50V
C504	1-126-960-11	ELECT	1uF	20%	50V
C505	1-126-964-11	ELECT	10uF	20%	50V
C506	1-126-925-11	ELECT	470uF	20%	10V
C511	1-137-374-11	FILM	0.047uF	5%	50V
C512	1-136-164-00	FILM	0.082uF	5%	50V
C513	1-137-367-11	FILM	0.0033uF	5%	50V
C521	1-126-964-11	ELECT	10uF	20%	50V
C551	1-162-282-31	CERAMIC	100PF	10%	50V
C552	1-161-494-00	CERAMIC	0.022uF		25V
C553	1-162-217-31	CERAMIC	56PF	5%	50V
C554	1-126-961-11	ELECT	2.2uF	20%	50V
C555	1-126-961-11	ELECT	2.2uF	20%	50V
C571	1-126-961-11	ELECT	2.2uF	20%	50V
C572	1-126-916-11	ELECT	1000uF	20%	6.3V
C601	1-164-159-11	CERAMIC	0.1uF		50V
C602	1-162-288-31	CERAMIC	330PF	10%	50V
C701	1-126-943-11	ELECT	2200uF	20%	25V
C702	1-126-943-11	ELECT	2200uF	20%	25V
C703	1-104-664-11	ELECT	47uF	20%	25V
C704	1-126-926-11	ELECT	1000uF	20%	10V
C705	1-126-926-11	ELECT	1000uF	20%	10V
C706	1-126-935-11	ELECT	470uF	20%	6.3V
C707	1-126-964-11	ELECT	10uF	20%	50V
C708	1-126-963-11	ELECT	4.7uF	20%	50V
C709	1-126-968-11	ELECT	100uF	20%	50V
C710	1-104-664-11	ELECT	47uF	20%	25V
C711	1-164-159-11	CERAMIC	0.1uF		50V
C801	1-126-963-11	ELECT	4.7uF	20%	50V
C805	1-161-494-00	CERAMIC	0.022uF		25V
C806	1-126-964-11	ELECT	10uF	20%	50V
C807	1-126-935-11	ELECT	470uF	20%	6.3V
C808	1-161-494-00	CERAMIC	0.022uF		25V
C809	1-161-494-00	CERAMIC	0.022uF		25V

Ref. No.	Part No.	Description			Remark
C810	1-162-282-31	CERAMIC	100PF	10%	50V
C811	1-164-159-11	CERAMIC	0.1uF		50V
C812	1-137-374-11	FILM	0.047uF	5%	50V
		< CONNECTOR >			
* CN81	1-568-826-11	SOCKET, CONNECTOR 7P			
CN101	1-695-087-11	PIN, CONNECTOR (PC BOARD) 7P			
CN201	1-695-087-11	PIN, CONNECTOR (PC BOARD) 7P			
* CN504	1-568-828-11	SOCKET, CONNECTOR 9P			
CN506	1-506-468-11	PIN, CONNECTOR 3P			
* CN801	1-568-845-11	SOCKET, CONNECTOR 31P			
* CNB31	1-691-916-21	CONNECTOR, BOARD TO BOARD			
* CNB33	1-691-916-21	CONNECTOR, BOARD TO BOARD			
CNE701	1-564-510-11	PLUG, CONNECTOR 7P			
CNE701	1-764-330-11	PIN, CONNECTOR (PCB)(V TYPE)7P			
		< DIODE >			
D131	8-719-911-19	DIODE 1SS119			
D132	8-719-911-19	DIODE 1SS119			
D231	8-719-911-19	DIODE 1SS119			
D232	8-719-911-19	DIODE 1SS119			
D511	8-719-911-19	DIODE 1SS119			
D512	8-719-911-19	DIODE 1SS119			
D513	8-719-911-19	DIODE 1SS119			
D551	8-719-911-19	DIODE 1SS119			
D701	8-719-024-99	DIODE 11ES2-NTA2B			
D702	8-719-024-99	DIODE 11ES2-NTA2B			
D703	8-719-024-99	DIODE 11ES2-NTA2B			
D704	8-719-024-99	DIODE 11ES2-NTA2B			
D705	8-719-024-99	DIODE 11ES2-NTA2B			
D706	8-719-024-99	DIODE 11ES2-NTA2B			
D707	8-719-024-99	DIODE 11ES2-NTA2B			
D708	8-719-933-33	DIODE HZS6A1L			
D709	8-719-986-05	DIODE HZS9A2LTA			
D710	8-719-985-88	DIODE HZS6B2LTA			
D711	8-719-911-19	DIODE 1SS119			
D712	8-719-911-19	DIODE 1SS119			
D713	8-719-986-00	DIODE HZS7C1LTA			
D714	8-719-911-19	DIODE 1SS119			
D715	8-719-985-41	DIODE HZS2CLL			
D801	8-719-933-33	DIODE HZS6A1L			
D802	8-719-933-33	DIODE HZS6A1L			
		< IC >			
IC501	8-752-066-35	IC CXA1563S			
IC502	8-752-055-62	IC CXA1579P			
IC503	8-759-634-51	IC M5218AP			
IC504	8-759-634-51	IC M5218AP			
IC505	8-759-634-51	IC M5218AP			
IC506	8-759-140-53	IC uPD4053BC			
IC507	8-759-634-51	IC M5218AP			
IC508	8-759-000-48	IC MC14052BCP			
IC509	8-759-916-14	IC SN74HC04AN			
IC510	8-759-634-51	IC M5218AP			
IC511	8-759-634-51	IC M5218AP			
IC512	8-759-634-51	IC M5218AP			
IC601	8-759-803-42	IC LA6500-FA			
IC701	8-759-634-51	IC M5218AP			

Ref. No.	Part No.	Description			Remark
IC801	8-752-856-27	IC CXP82612-022Q			
IC802	8-759-165-82	IC PST600E-T			
		< JACK >			
J501	1-784-430-11	JACK, PIN 4P (LINE IN, OUT)			
		< FILTER >			
LPF101	1-233-271-11	FILTER, LOW PASS			
LPF201	1-233-271-11	FILTER, LOW PASS			
		< TRANSISTOR >			
Q101	8-729-900-89	TRANSISTOR DTC144ES			
Q102	8-729-900-80	TRANSISTOR DTC114ES			
Q103	8-729-900-80	TRANSISTOR DTC114ES			
Q121	8-729-922-37	TRANSISTOR 2SD2144S			
Q122	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q201	8-729-900-89	TRANSISTOR DTC144ES			
Q202	8-729-900-80	TRANSISTOR DTC114ES			
Q203	8-729-900-80	TRANSISTOR DTC114ES			
Q221	8-729-922-37	TRANSISTOR 2SD2144S			
Q222	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q503	8-729-422-57	TRANSISTOR UN4111			
Q511	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q512	8-729-900-74	TRANSISTOR DTC143TS			
Q521	8-729-900-80	TRANSISTOR DTC114ES			
Q531	8-729-422-57	TRANSISTOR UN4111			
Q532	8-729-900-80	TRANSISTOR DTC114ES			
Q551	8-729-119-76	TRANSISTOR 2SA1175-HFE			
Q572	8-729-422-57	TRANSISTOR UN4111			
Q573	8-729-900-65	TRANSISTOR DTA144ES			
Q601	8-729-801-93	TRANSISTOR 2SD1387			
Q701	8-729-141-83	TRANSISTOR 2SB1094-LK			
Q702	8-729-209-15	TRANSISTOR 2SD2012			
Q704	8-729-141-83	TRANSISTOR 2SB1094-LK			
Q705	8-729-119-78	TRANSISTOR 2SC403SP-51			
Q707	8-729-119-76	TRANSISTOR 2SA1175-HFE			
Q708	8-729-140-04	TRANSISTOR 2SB1116A-L			
Q805	8-729-119-76	TRANSISTOR 2SA1175-HFE			
		< RESISTOR >			
R101	1-247-838-00	CARBON	2K	5%	1/4W
R102	1-247-843-11	CARBON	3.3K	5%	1/4W
R104	1-249-417-11	CARBON	1K	5%	1/4W
R105	1-249-420-11	CARBON	1.8K	5%	1/4W
R106	1-247-887-00	CARBON	220K	5%	1/4W
R107	1-247-846-11	CARBON	4.3K	5%	1/4W
R108	1-249-429-11	CARBON	10K	5%	1/4W
R110	1-249-429-11	CARBON	10K	5%	1/4W
R111	1-249-427-11	CARBON	6.8K	5%	1/4W
R112	1-247-864-11	CARBON	24K	5%	1/4W
R113	1-249-429-11	CARBON	10K	5%	1/4W
R114	1-249-437-11	CARBON	47K	5%	1/4W
R115	1-249-433-11	CARBON	22K	5%	1/4W
R116	1-249-434-11	CARBON	27K	5%	1/4W
R121	1-249-437-11	CARBON	47K	5%	1/4W
R122	1-249-421-11	CARBON	2.2K	5%	1/4W

MAIN

Ref. No.	Part No.	Description			Remark	
R123	1-249-421-11	CARBON	2.2K	5%	1/4W	
R124	1-249-437-11	CARBON	47K	5%	1/4W	
R125	1-249-425-11	CARBON	4.7K	5%	1/4W	
R131	1-249-425-11	CARBON	4.7K	5%	1/4W	
R132	1-247-822-11	CARBON	430	5%	1/4W	
R133	1-247-866-11	CARBON	30K	5%	1/4W	
R134	1-249-435-11	CARBON	33K	5%	1/4W	
R135	1-249-439-11	CARBON	68K	5%	1/4W	
R136	1-249-410-11	CARBON	270	5%	1/4W	
R141	1-249-432-11	CARBON	18K	5%	1/4W	
R143	1-249-432-11	CARBON	18K	5%	1/4W	
R144	1-247-848-11	CARBON	5.1K	5%	1/4W	
R145	1-249-409-11	CARBON	220	5%	1/4W	
R151	1-249-433-11	CARBON	22K	5%	1/4W	
R152	1-249-417-11	CARBON	1K	5%	1/4W	
R153	1-249-441-11	CARBON	100K	5%	1/4W	
R154	1-249-433-11	CARBON	22K	5%	1/4W	
R201	1-247-838-00	CARBON	2K	5%	1/4W	
R202	1-247-843-11	CARBON	3.3K	5%	1/4W	
R204	1-249-417-11	CARBON	1K	5%	1/4W	
R205	1-249-420-11	CARBON	1.8K	5%	1/4W	
R206	1-247-887-00	CARBON	220K	5%	1/4W	
R207	1-247-846-11	CARBON	4.3K	5%	1/4W	
R208	1-249-429-11	CARBON	10K	5%	1/4W	
R210	1-249-429-11	CARBON	10K	5%	1/4W	
R211	1-249-427-11	CARBON	6.8K	5%	1/4W	
R212	1-247-864-11	CARBON	24K	5%	1/4W	
R213	1-249-429-11	CARBON	10K	5%	1/4W	
R214	1-249-437-11	CARBON	47K	5%	1/4W	
R215	1-249-433-11	CARBON	22K	5%	1/4W	
R216	1-249-434-11	CARBON	27K	5%	1/4W	
R221	1-249-437-11	CARBON	47K	5%	1/4W	
R222	1-249-421-11	CARBON	2.2K	5%	1/4W	
R223	1-249-421-11	CARBON	2.2K	5%	1/4W	
R224	1-249-437-11	CARBON	47K	5%	1/4W	
R225	1-249-425-11	CARBON	4.7K	5%	1/4W	
R231	1-249-425-11	CARBON	4.7K	5%	1/4W	
R232	1-247-822-11	CARBON	430	5%	1/4W	
R233	1-247-866-11	CARBON	30K	5%	1/4W	
R234	1-249-435-11	CARBON	33K	5%	1/4W	
R235	1-249-439-11	CARBON	68K	5%	1/4W	
R236	1-249-410-11	CARBON	270	5%	1/4W	
R241	1-249-432-11	CARBON	18K	5%	1/4W	
R243	1-249-432-11	CARBON	18K	5%	1/4W	
R244	1-247-848-11	CARBON	5.1K	5%	1/4W	
R245	1-249-409-11	CARBON	220	5%	1/4W	
R251	1-249-433-11	CARBON	22K	5%	1/4W	
R252	1-249-417-11	CARBON	1K	5%	1/4W	
R253	1-249-441-11	CARBON	100K	5%	1/4W	
R254	1-249-433-11	CARBON	22K	5%	1/4W	
⚠R502	1-215-452-00	METAL	20K	1%	1/4W	F
⚠R503	1-215-455-00	METAL	27K	1%	1/4W	F
R505	1-249-417-11	CARBON	1K	5%	1/4W	
R512	1-249-421-11	CARBON	2.2K	5%	1/4W	
R513	1-249-441-11	CARBON	100K	5%	1/4W	
R514	1-249-441-11	CARBON	100K	5%	1/4W	
R515	1-249-436-11	CARBON	39K	5%	1/4W	
R516	1-249-425-11	CARBON	4.7K	5%	1/4W	

Ref. No.	Part No.	Description			Remark
R517	1-249-433-11	CARBON	22K	5%	1/4W
R518	1-249-425-11	CARBON	4.7K	5%	1/4W
R521	1-249-426-11	CARBON	5.6K	5%	1/4W
R522	1-249-426-11	CARBON	5.6K	5%	1/4W
R523	1-247-858-11	CARBON	13K	5%	1/4W
R524	1-247-852-11	CARBON	7.5K	5%	1/4W
R525	1-247-854-11	CARBON	9.1K	5%	1/4W
R526	1-247-854-11	CARBON	9.1K	5%	1/4W
R527	1-249-426-11	CARBON	5.6K	5%	1/4W
R528	1-249-422-11	CARBON	2.7K	5%	1/4W
R529	1-249-429-11	CARBON	10K	5%	1/4W
R530	1-249-421-11	CARBON	2.2K	5%	1/4W
R531	1-249-426-11	CARBON	5.6K	5%	1/4W
R532	1-247-864-11	CARBON	24K	5%	1/4W
R535	1-249-419-11	CARBON	1.5K	5%	1/4W
R536	1-249-421-11	CARBON	2.2K	5%	1/4W
R537	1-247-866-11	CARBON	30K	5%	1/4W
R538	1-247-852-11	CARBON	7.5K	5%	1/4W
R539	1-249-431-11	CARBON	15K	5%	1/4W
R540	1-247-874-11	CARBON	62K	5%	1/4W
R541	1-249-429-11	CARBON	10K	5%	1/4W
R542	1-249-429-11	CARBON	10K	5%	1/4W
R543	1-249-429-11	CARBON	10K	5%	1/4W
R544	1-249-429-11	CARBON	10K	5%	1/4W
R553	1-249-437-11	CARBON	47K	5%	1/4W
R555	1-249-427-11	CARBON	6.8K	5%	1/4W
R556	1-247-843-11	CARBON	3.3K	5%	1/4W
R557	1-249-441-11	CARBON	100K	5%	1/4W
R558	1-249-429-11	CARBON	10K	5%	1/4W
R559	1-249-441-11	CARBON	100K	5%	1/4W
R560	1-249-417-11	CARBON	1K	5%	1/4W
R561	1-249-432-11	CARBON	18K	5%	1/4W
R562	1-249-436-11	CARBON	39K	5%	1/4W
R572	1-249-429-11	CARBON	10K	5%	1/4W
R573	1-249-429-11	CARBON	10K	5%	1/4W
R574	1-249-435-11	CARBON	33K	5%	1/4W
R575	1-247-807-31	CARBON	100	5%	1/4W
R576	1-249-435-11	CARBON	33K	5%	1/4W
R577	1-249-429-11	CARBON	10K	5%	1/4W
R578	1-249-433-11	CARBON	22K	5%	1/4W
R601	1-249-419-11	CARBON	1.5K	5%	1/4W
R602	1-249-429-11	CARBON	10K	5%	1/4W
R603	1-247-807-31	CARBON	100	5%	1/4W
R604	1-249-433-11	CARBON	22K	5%	1/4W
R605	1-249-433-11	CARBON	22K	5%	1/4W
R606	1-249-430-11	CARBON	12K	5%	1/4W
R607	1-249-433-11	CARBON	22K	5%	1/4W
R608	1-247-862-11	CARBON	20K	5%	1/4W
R609	1-249-429-11	CARBON	10K	5%	1/4W
R701	1-249-425-11	CARBON	4.7K	5%	1/4W
R702	1-249-419-11	CARBON	1.5K	5%	1/4W
R703	1-249-418-11	CARBON	1.2K	5%	1/4W
R704	1-249-427-11	CARBON	6.8K	5%	1/4W
R705	1-249-419-11	CARBON	1.5K	5%	1/4W
R706	1-249-419-11	CARBON	1.5K	5%	1/4W
R707	1-249-429-11	CARBON	10K	5%	1/4W
R708	1-249-425-11	CARBON	4.7K	5%	1/4W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
R709	1-249-409-11	CARBON	220	5%	1/4W
R710	1-249-417-11	CARBON	1K	5%	1/4W
R711	1-249-427-11	CARBON	6.8K	5%	1/4W
R712	1-249-427-11	CARBON	6.8K	5%	1/4W
R713	1-249-421-11	CARBON	2.2K	5%	1/4W
R715	1-249-421-11	CARBON	2.2K	5%	1/4W
R716	1-249-437-11	CARBON	47K	5%	1/4W
R717	1-249-429-11	CARBON	10K	5%	1/4W
R718	1-247-870-11	CARBON	43K	5%	1/4W
R719	1-249-429-11	CARBON	10K	5%	1/4W
R801	1-249-417-11	CARBON	1K	5%	1/4W
R802	1-249-441-11	CARBON	100K	5%	1/4W
R803	1-249-429-11	CARBON	10K	5%	1/4W
R805	1-249-434-11	CARBON	27K	5%	1/4W
R806	1-249-434-11	CARBON	27K	5%	1/4W
R807	1-249-434-11	CARBON	27K	5%	1/4W
R808	1-249-434-11	CARBON	27K	5%	1/4W
R809	1-249-434-11	CARBON	27K	5%	1/4W
R810	1-247-807-31	CARBON	100	5%	1/4W
R811	1-247-807-31	CARBON	100	5%	1/4W
R812	1-247-807-31	CARBON	100	5%	1/4W
R813	1-247-807-31	CARBON	100	5%	1/4W
R814	1-247-807-31	CARBON	100	5%	1/4W
R815	1-247-807-31	CARBON	100	5%	1/4W
R816	1-247-807-31	CARBON	100	5%	1/4W
R821	1-249-429-11	CARBON	10K	5%	1/4W
R822	1-249-429-11	CARBON	10K	5%	1/4W
R823	1-249-429-11	CARBON	10K	5%	1/4W
R824	1-249-421-11	CARBON	2.2K	5%	1/4W
R825	1-249-435-11	CARBON	33K	5%	1/4W
R826	1-249-421-11	CARBON	2.2K	5%	1/4W
R827	1-249-422-11	CARBON	2.7K	5%	1/4W
R828	1-249-422-11	CARBON	2.7K	5%	1/4W
R829	1-249-422-11	CARBON	2.7K	5%	1/4W
R830	1-249-429-11	CARBON	10K	5%	1/4W
R831	1-249-429-11	CARBON	10K	5%	1/4W
R832	1-249-437-11	CARBON	47K	5%	1/4W
R833	1-249-437-11	CARBON	47K	5%	1/4W
		< VARIABLE RESISTOR >			
RV111	1-241-765-11	RES, ADJ, CARBON 22K			
RV211	1-241-765-11	RES, ADJ, CARBON 22K			
		< TEST PIN >			
* TP801	1-560-060-00	PIN, CONNECTOR 2P (TEST TERMINAL)			
		< VIBRATOR >			
X801	1-577-360-11	VIBRATOR, CERAMIC (6MHz)			
**********					
		PANEL BOARD			
		**********			
		(Included in MAIN BOARD, COMPLETE)			
*	3-377-337-11	HOLDER (FL)			
		< CAPACITOR >			
C901	1-104-665-11	ELECT	100uF	20%	10V

Ref. No.	Part No.	Description			Remark
		< CONNECTOR >			
* CN901	1-568-845-11	SOCKET, CONNECTOR 31P			
		< FILTER >			
FL901	1-517-374-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC901	8-749-014-66	IC NJL56H400			
		< RESISTOR >			
R902	1-247-848-11	CARBON	5.1K	5%	1/4W
R903	1-249-426-11	CARBON	5.6K	5%	1/4W
R904	1-249-429-11	CARBON	10K	5%	1/4W
R905	1-249-435-11	CARBON	33K	5%	1/4W
R906	1-249-420-11	CARBON	1.8K	5%	1/4W
R907	1-247-843-11	CARBON	3.3K	5%	1/4W
R908	1-249-426-11	CARBON	5.6K	5%	1/4W
R927	1-247-807-31	CARBON	100	5%	1/4W
R928	1-247-807-31	CARBON	100	5%	1/4W
		< SWITCH >			
S901	1-572-184-11	SWITCH, KEYBOARD (■)			
S902	1-572-184-11	SWITCH, KEYBOARD (AMS, ◀◀)			
S903	1-572-184-11	SWITCH, KEYBOARD (AMS, ▶▶)			
S904	1-572-184-11	SWITCH, KEYBOARD (●, REC)			
S905	1-572-184-11	SWITCH, KEYBOARD (⟲, REC MUTING)			
S906	1-572-184-11	SWITCH, KEYBOARD (▷)			
S907	1-572-184-11	SWITCH, KEYBOARD (❚❚, PAUSE)			
S908	1-572-184-11	SWITCH, KEYBOARD (MEMORY)			
S909	1-572-184-11	SWITCH, KEYBOARD (RESET)			
**********					
		REC VOL BOARD			
		**********			
		(Included in MAIN BOARD, COMPLETE)			
		< CONNECTOR >			
* CN904	1-568-828-11	SOCKET, CONNECTOR 9P			
		< RESISTOR >			
R921	1-249-430-11	CARBON	12K	5%	1/4W
R922	1-249-427-11	CARBON	6.8K	5%	1/4W
R923	1-247-843-11	CARBON	3.3K	5%	1/4W
R924	1-247-868-11	CARBON	36K	5%	1/4W
R925	1-247-836-11	CARBON	1.6K	5%	1/4W
R926	1-249-421-11	CARBON	2.2K	5%	1/4W
		< VARIABLE RESISTOR >			
RV901	1-225-607-11	RES, VAR, CARBON 10K/10K (REC LEVEL)			
RV902	1-223-605-11	RES, VAR, CARBON 20K/20K (BALANCE)			
		< SWITCH >			
S921	1-572-184-11	SWITCH, KEYBOARD (AUTO CAL)			
S922	1-762-647-11	SWITCH, ROTARY (DOLBY NR)			
**********					

TRANSFORMER

Ref. No.	Part No.	Description			Remark
		TRANSFORMER BOARD			
		**********			
		(Included in MAIN BOARD, COMPLETE)			
*	3-923-762-11	HOLDER (TR)			
		< CAPACITOR >			
C712	1-161-494-00	CERAMIC	0.022uF		25V
C714	1-136-169-00	FILM	0.22uF	5%	50V
C715	1-136-169-00	FILM	0.22uF	5%	50V
		< CONNECTOR >			
* CN702	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P			
CN704	1-568-226-11	PIN, CONNECTOR 2P			
**********					
		MISCELLANEOUS			
		**********			
⚠7	1-575-651-21	CORD, POWER (AEP)			
⚠7	1-696-586-11	CORD, POWER (UK)			
⚠7	1-696-845-11	CORD, POWER (Australian)			
59	1-696-456-11	WIRE (FLAT TYPE) (31 CORE)			
60	1-590-486-11	WIRE (FLAT TYPE) (7 CORE)			
103	1-769-914-11	WIRE (FLAT TYPE)(9 CORE)			
152	A-2004-673-A	DECK (ONE) ASSY, HEAD (including HRP901)			
161	1-638-983-11	MOTOR FLEXIBLE BOARD			
M901	X-3363-501-2	MOTOR ASSY (REEL)			
M902	X-3374-302-1	MOTOR ASSY (CAPSTAN)			
⚠T901	1-427-751-11	TRANSFORMER, POWER			
**********					
		**********			
		HARDWARE LIST			
		**********			
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S			
#2	7-685-885-09	SCREW +BVTT 4X16 (S)			
#3	7-685-863-09	SCREW +BVTT 2.6X8 (S)			
#4	7-685-134-19	SCREW +PTPWH 2.6X8 (TYPE2)			
#5	7-685-862-09	SCREW +BVTT 2.6X6 (S)			
#6	7-621-772-58	SCREW (+B 2X10)			
#7	7-621-775-00	SCREW +B 2.6X3			
#8	7-627-556-08	SCREW +P 2.6X2.8			
**********					
		ACCESSORIES & PACKING MATERIALS			
		**********			
	1-776-263-11	CORD, CONNECTION (AUDIO) 1.5m			
	3-861-966-11	MANUAL, INSTRUCTIONS (ENGLISH, FRENCH, SPANISH, PORTUGUESE)			
	3-861-966-21	MANUAL, INSTRUCTIONS (GERMAN, DUTCH, SWEDISH, ITALIAN) (AEP)			

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