

# HCD-BX9/DX9

## SERVICE MANUAL


Ver 1.2 2001.08



Photo: HCD-DX9

*AEP Model*  
*UK Model*  
HCD-BX9  
*E Model*  
*Australian Model*  
HCD-DX9

HCD-BX9/DX9 is the tuner, deck, CD and amplifier section in MHC-BX9/DX9.

This stereo system is equipped with the Dolby\* B-type noise reduction system.  
\* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol  are trademarks of the Dolby Laboratories Licensing Corporation.

|                   |                                    |                  |
|-------------------|------------------------------------|------------------|
| CD SECTION        | Model Name Using Similar Mechanism | HCD-BX7/DX7/DX7J |
|                   | CD Mechanism Type                  | CDM58-K2BD38     |
|                   | Base Unit Type                     | BU-K2BD38        |
|                   | Optical Pick-up Type               | KSM-213DAP/ZNP   |
| TAPE DECK SECTION | Model Name Using Similar Mechanism | HCD-BX7/DX7/DX7J |
|                   | Tape Transport Mechanism Type      | TCM-230MWR11     |

### SPECIFICATIONS

#### Amplifier section

##### European model:

DIN power output (rated)

130 + 130 W

(6 Ω at 1 kHz, DIN)

Continuous RMS power output (reference)

170 + 170 W

(6 Ω at 1 kHz, 10% THD)

##### Other models:

The following measured at AC 120, 220, 240 V  
50/60 Hz

DIN power output (rated)

220 + 220 W

(4 Ω at 1 kHz, DIN)

Continuous RMS power output (reference)

300 + 300 W

(4 Ω at 1 kHz, 10% THD)

#### Inputs

MD/VIDEO (AUDIO) IN:

(phone jacks)

voltage 450 mV/250 mV,

impedance 47 kΩ

MIC:

(phone jack)

sensitivity 1 mV,

impedance 10 kΩ

#### Outputs

PHONES:

(stereo mini jack)

accepts headphones of 8 Ω or more

FRONT SPEAKER:

HCD-BX9:

accepts impedance of 6 to 16 Ω

HCD-DX9:

accepts impedance of 4 to 16 Ω

#### CD player section

System

Compact disc and digital audio system

Laser

Semiconductor laser (λ=780 nm)

Emission duration: continuous

Laser output

Max. 44.6 μW\*

\*This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.

Frequency response

2 Hz – 20 kHz (±0.5 dB)

Wavelength

780 – 790 nm

Signal-to-noise ratio

More than 90 dB

Dynamic range

More than 90 dB

CD OPTICAL DIGITAL OUT

(Square optical connector jack, rear panel)

Wavelength 660 nm

Output Level –18 dBm

#### Tape player section

Recording system

4-track 2-channel stereo

Frequency response (DOLBY NR OFF)

40 – 13,000 Hz (±3 dB),

using Sony TYPE I cassette

#### Tuner section

FM stereo, FM/AM superheterodyne tuner

#### FM tuner section

Tuning range

87.5 – 108.0 MHz

Antenna

FM lead antenna

Antenna terminals

75 Ω, unbalanced

Intermediate frequency

10.7 MHz

#### AM tuner section

Tuning range

BX9, Saudi Arabia models:

531 – 1,602 kHz

(with the interval set at 9 kHz)

Other models:

531 – 1,602 kHz

(with the interval set at 9 kHz)

530 – 1,710 kHz

(with the interval set at 10 kHz)

Antenna

AM Loop antenna

Antenna terminals

External antenna terminal

Intermediate frequency

450 kHz

— Continued on next page —

## COMPACT DISC DECK RECEIVER

# SONY®

9-929-239-13

2001H0200-1

© 2001.8

**Sony Corporation**

**Home Audio Company**

**Shinagawa Tec Service Manual Production Group**

## SECTION 4 TEST MODE

### [MC Cold Reset]

- The cold reset clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

#### Procedure:

1. Press three buttons **[■]**, **[ENTER]**, and **[I/O]** simultaneously.
2. The fluorescent indicator tube displays "COLD RESET" and the set is reset.

### [CD Ship Mode]

- This mode moves the pickup to the position durable to vibration. Use this mode when returning the set to the customer after repair.

#### Procedure:

1. Press **[I/O]** button to turn the set ON.
2. Press **[CD]** button and **[I/O]** button simultaneously.
3. After the "STANDBY" display blinks six times, a message "LOCK" is displayed on the fluorescent indicator tube, and the CD ship mode is set.

### [MC Hot Reset]

- This mode resets the set with the preset data kept stored in the memory. The hot reset mode functions same as if the power cord is plugged in and out.

#### Procedure:

1. Press three buttons **[■]**, **[ENTER]**, and **[DISC 1]** simultaneously.
2. The fluorescent indicator tube becomes blank instantaneously, and the set is reset.

### [CD Service Mode]

- This mode can run the CD sled motor freely. Use this mode, for instance, when cleaning the pickup.

#### Procedure:

1. Press **[I/O]** button to turn the set ON.
2. Select the function "CD".
3. Press three buttons **[■]**, **[ENTER]**, and **[OPEN/CLOSE]** simultaneously.
4. The CD service mode is selected.
5. With the CD in stop status, turn the shuttle knob clockwise to move the pickup to outside track, or turn the shuttle knob counter-clockwise to inside track.
6. To exit from this mode, perform as follows:
  - 1) Move the pickup to the most inside track.
  - 2) Press three buttons in the same manner as step 2.

- Note:**
- Always move the pickup to most inside track when exiting from this mode. Otherwise, a disc will not be unloaded.
  - Do not run the sled motor excessively, otherwise the gear can be chipped.

### [VACS ON/OFF Mode]

- This mode is used to switch ON and OFF the VACS (Variable Attenuation Control System).

#### Procedure:

Press the **[ENTER]** and **[SPECTRUM]** buttons simultaneously. The message "VACS OFF" or "VACS ON" appears.

### [Change-over of MW Tuner Step between 9 kHz and 10 kHz]

- A step of MW channels can be changed over between 9 kHz and 10 kHz.

#### Procedure:

1. Press **[I/O]** button to turn the set ON.
2. Select the function "TUNER", and press **[TUNER/BAND]** button to select the BAND "MW".
3. Press **[I/O]** button to turn the set OFF.
4. Press **[ENTER]** and **[I/O]** buttons simultaneously, and the display of fluorescent indicator tube changes to "MW 9 k STEP" or "MW 10 k STEP", and thus the channel step is changed over.

### [GC Test Mode]

- This mode is used to check the software version, FL tube, LED, keyboard and VACS.

#### Procedure:

1. Press three buttons **[■]**, **[ENTER]**, and **[DISC 2]** simultaneously.
2. LEDs and fluorescent indicator tube are all turned on.
3. When you want to enter the software version display mode, press **[DISC 1]**. The model number and destination are displayed.
4. Each time **[DISC 1]** is pressed, the display changes starting from MC version, GC version, VC version, CD version, CM version, ST version, TC version, TA version, TM version and BR version in this order, and returns to the model number and destination display.
5. When **[DISC 3]** is pressed while the version numbers are being displayed except model number and destination, year, month and day of the software creation appear. When **[DISC 3]** is pressed again, the display returns to the software version display. When **[DISC 1]** is pressed while year, month and day of the software creation are being displayed, the year, month and day of creation of the software versions are displayed in the same order of version display.
6. Press **DISC 2** button, and the key check mode is activated.
7. In the key check mode, the fluorescent indicator tube displays "KEY0 VOL0". Each time a button is pressed, "KEY" value increases. However, once a button is pressed, it is no longer taken into account.  
"VOL" value increases like 1, 2, 3 ... if rotating **[VOLUME]** knob in "+" direction, or it decreases like 0, 9, 8 ... if rotating in "-" direction.
8. Also when **[DISC 3]** is pressed after lighting of all LEDs and FL tubes, value of VACS appears.
9. To exit from this mode, press three buttons in the same manner as step 1, or disconnect the power cord.

### [MC Test Mode]

- This mode is used to check operations of the respective sections of Amplifier, Tuner, CD and Tape.

#### Procedure:

1. Press the **[I/C]** button to turn on the set.
2. Press the three buttons of **[■]**, **[ENTER]** and **[DISC 3]** simultaneously.
3. A message "TEST MODE" appears on the FL display tube.
4. When **[Δ (CURSOR UP)]** button is pressed, GEQ increases to its maximum and a message "GEQ ALL MA" appears.
5. When **[∇ (CURSOR DOWN)]** button is pressed, GEQ decreases to its minimum and a message "GEQ ALL M1" appears.
6. When **[◀ (CURSOR LEFT)]** or **[▶ (CURSOR RIGHT)]** button is pressed, GEQ is set to flat and a message "GEQ FLAT" appears.
7. When the VOLUME control knob is turned clockwise even slightly, the sound volume increases to its maximum and a message "VOLUME MAX" appears for two seconds, then the display returns to the original display.
8. When the VOLUME control knob is turned counter-clockwise even slightly, the sound volume decreases to its minimum and a message "VOLUME MIN" appears for two seconds, then the display returns to the original display.
9. In the test mode, the default-preset channel is called even when the TUNER is selected and an attempt is made to call the preset channel that has been stored in memory, by operating the Shuttle knob. (It means that the memory is cleared.)
10. When CD is selected and the **[EDIT]** button is pressed, the disc that is being chucked at this moment becomes the default setting. It means that the default disc only is accessed when any other discs are selected even though the display indication changes accordingly. At the same time, the **[DISC SKIP EXCHANGE]** and **[OPEN/CLOSE]** cannot be accepted. (It means that the tray motor and the turntable motor are disabled of their operation.)
11. When a tape is inserted in Deck B and recording is started, the input source function selects VIDEO automatically.
12. When **[■]** button is pressed to stop recording, the Tape (Deck) B is selected and tape is rewound using the Shuttle knob, tape is rewound, tape is stops at around the record-starting position and playback of the recorded portion of the tape is started. If PAUSE is inserted even once during recording, tape is rewound to the position around the PAUSE position and is played back.
13. When the **[CD SYNC HI-DUB]** Button is press during playback of Deck B, either normal speed or high speed can be selected by this button.
14. Select the desired loop by pressing the **[PLAY MODE]** button. Insert a test tape AMS-110A or AMS-RO to Deck A.
15. Press the **[SPECTRUM]** button to enter the AMS test mode.
16. After a tape is rewound first, the FF AMS is checked, and the mechanism is shut off after detecting the AMS signal twice.
17. Then the REW AMS is checked and the mechanism is shut off after detecting the AMS signal twice.
18. When the check is complete, a message of either OK or NG appears.
19. When you want to exit this mode, press the **[I/C]** button twice. The cold reset is enforced at the same time.

**[Aging Mode]**

This mode can be used for operation check of CD section and tape deck section.

- If an error occurred:  
The aging operation stops and display status.
- If no error occurs:  
The aging operation continues repeatedly.

1. Operating method of Aging Mode

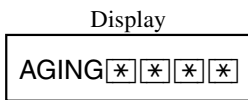
Turn on the main power and select “CD” of the function.

- 1) Set a disc in DISC1 tray. Select ALL DISC CONTINUE, and REPEAT OFF.
- 2) Load the tapes recording use into the decks A and B respectively.
- 3) Press three buttons **■**, **ENTER**, and **DISC SKIP/EX-CHANGE** simultaneously.
- 4) Aging operations of CD and tape are started at the same time.
- 5) To exit the aging mode, perform [MC Cold Reset].

3. Aging Mode in CD section

1) Display state

- No error occurs



**Note:**

\* \* \* \* : Number of aging operations

**Error display**

E \*\* □ ### \$\$ %:  
① ② ③ ④ ⑤

|        |  |   |
|--------|--|---|
| ① **   | The error No. 00 indicates the newest error. As the error No. increases, it means the older error.<br>When you want to retrieve the error history, press the <b>PLAY MODE</b> button in the case of mechanism error.<br>Or press the <b>REPEAT</b> button in the case of NO DISC error.                |   |
| ② □    | M: Mechanism error   | D: No disc error  |
| ③ ###  | Don't care   | 01: FOCUS ERROR<br>02: GFS ERROR<br>03: SETUP ERROR   |
| ④ \$\$ | High order digits only<br>D: Stopped during closing due to problems other than mechanism.<br>E: Stopped during opening due to problems other than mechanism.<br>C: Stopped during chucking due to problems other than mechanism.<br>F: Stopped during EX-opening due to problems other than mechanism. | 01: NO DISC judgment without chucking retry<br>02: NO DISC judgment after chucking retry  |
| ⑤ %:   | Emergency related errors (High order digits only)<br>1: Stopped during chuck-up<br>2: Stopped during chuck-down<br>3: Time out by EX-OPEN<br>5: Time out by EX-CLOSE   | Status at the time of NO DISC judgment (High order digits only)<br>1: STOP<br>2: SETUP<br>3: TOC READ<br>4: ACCESS<br>5: PLAY BACK<br>6: PAUSE<br>7: MANUAL SEARCH (PLAY)<br>8: MANUAL SEARCH (PAUSE) |

- When the buttons **■**, **ENTER** and **DISC 1** are pressed simultaneously, number of time of the mechanism error and the NO DISC error can be checked.  
Display: EMC\*\*EDC\*\*      \*\*: Number of times of error (Maximum three times)  
EMC: Mechanism error  
EDC: NO DISC error

- When aging operation is complete, be sure to perform the MC Cold Reset to reset the error history.

2) Operation during aging mode

In the aging mode, the program is executed in the following sequence.

- (1) The disc tray opens and closes.
- (2) The mechanism accesses DISC 2 and makes an attempt to read TOC. However, since there are no discs, a message “CD2 NO DISC” appears.
- (3) The mechanism accesses DISC 3 and a message “CD3 NO DISC” appears.
- (4) The disc tray turns to select a disc 1.
- (5) A disc is chucked.
- (6) TOC of disc is read.
- (7) The pickup accesses to the track 1, and playing 2 seconds.
- (8) The pickup accesses to the last track, and playing 2 seconds.
- (9) Every time when an aging operation of step 1 to step 8 is complete, the display “AGING[\*][\*][\*][\*]” value increases as the number of aging operations is counted up.
- (10) Returns to step 1.

3. Aging Mode in Tape Deck section

1) Display state

- No error occurs  
Display action now
- Error occurred  
Display action last time

| NO. | Display action | Action contents      | Final timing                    |
|-----|----------------|----------------------|---------------------------------|
| 1   | TAPE A AG-1    | Rewind the TAPE A, B | The top of tape                 |
| 2   | TAPE A AG-2    | FWD play the TAPE A  | 2 minutes playing               |
| 3   | TAPE A AG-3    | F.F. the TAPE A      | 20 second FF or the end of tape |
| 4   | TAPE A AG-4    | REV play the TAPE A  | 2 minutes playing               |
| 5   | TAPE A AG-5    | Rewind the TAPE A    | The top of tape                 |
| 6   | TAPE B AG-2    | FWD play the TAPE B  | 2 minutes playing               |
| 7   | TAPE B AG-3    | F.F. the TAPE B      | 20 second FF or the end of tape |
| 8   | TAPE B AG-4    | REV play the TAPE B  | 2 minutes playing               |
| 9   | TAPE B AG-5    | Rewind the TAPE B    | The top of tape                 |

2) Operation during aging mode

In the aging mode, the program is executed in the following sequence.

- (1) Rewind is executed up to the top of tape A and B.
- (2) A tape on FWD side is played for 2 minutes.
- (3) FF is executed up to either made for 20 second or the end of tape.
- (4) A tape is reversed, and the tape on REV side is played for 2 minutes.
- (5) Rewind is executed up to the top of tape.
- (6) Returns to step 2, and repeat steps from 2 to 5.

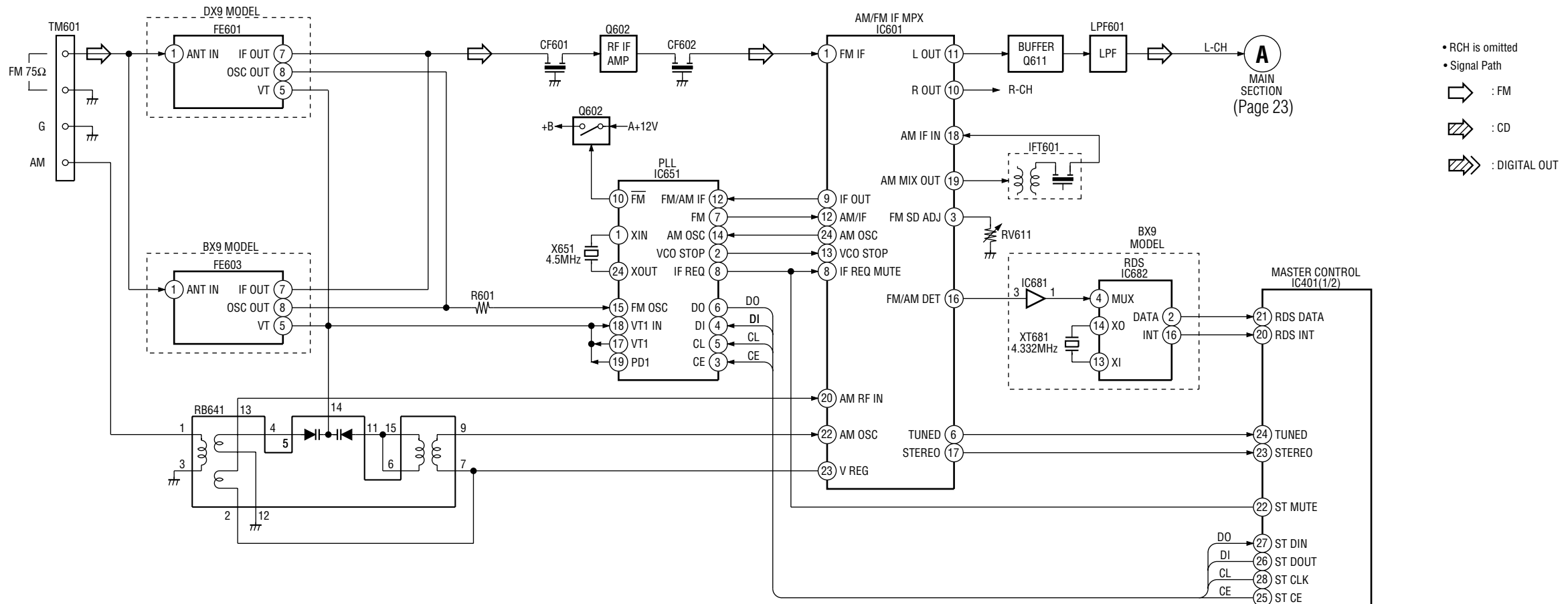
**[Function Change Mode]**

\* elect either VIDEO or MD of the external FUNCTION input.

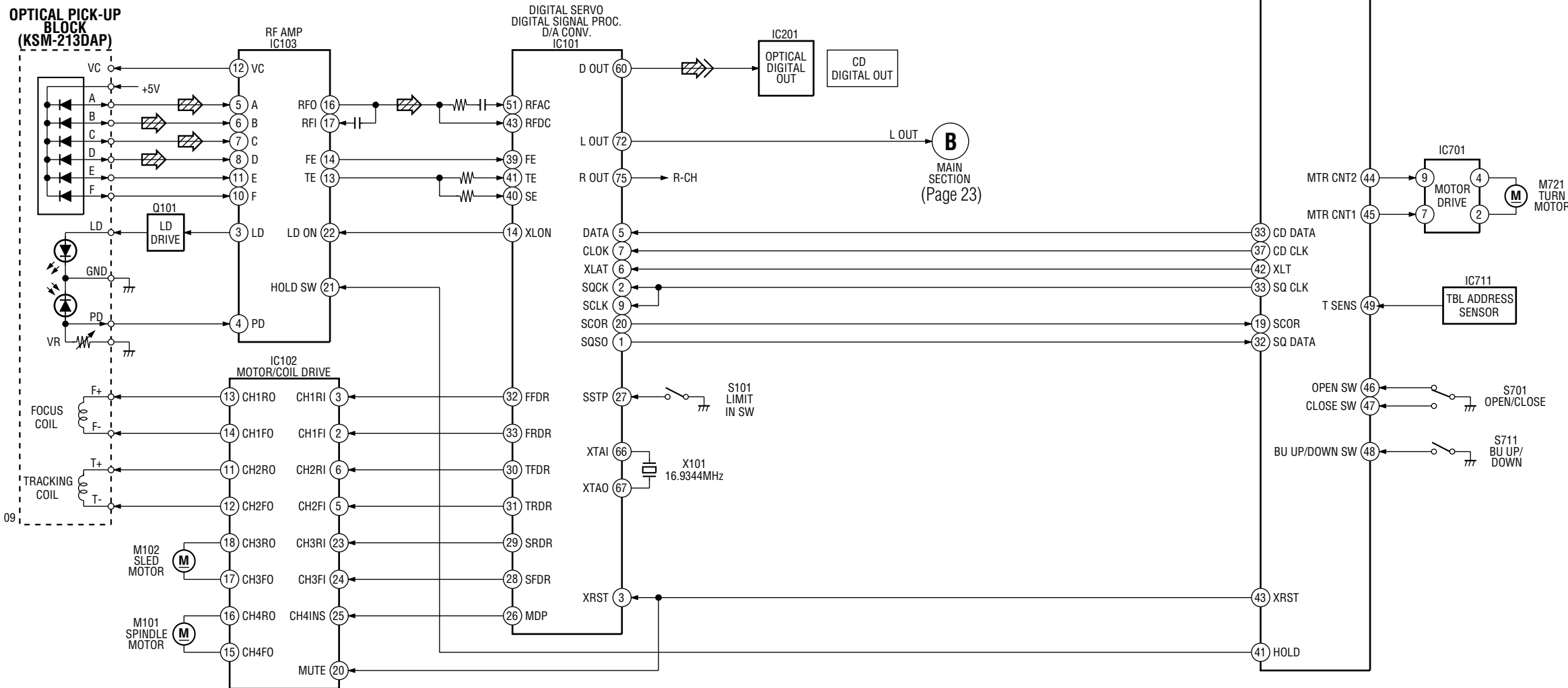
**Procedure:**

1. Turn on the power.
2. Press the two buttons **[ENTER]** and **[I/O]** at the same time.  
The main power is turned on and the other function of the previous function is selected and displayed. “MD” or “VIDEO”.

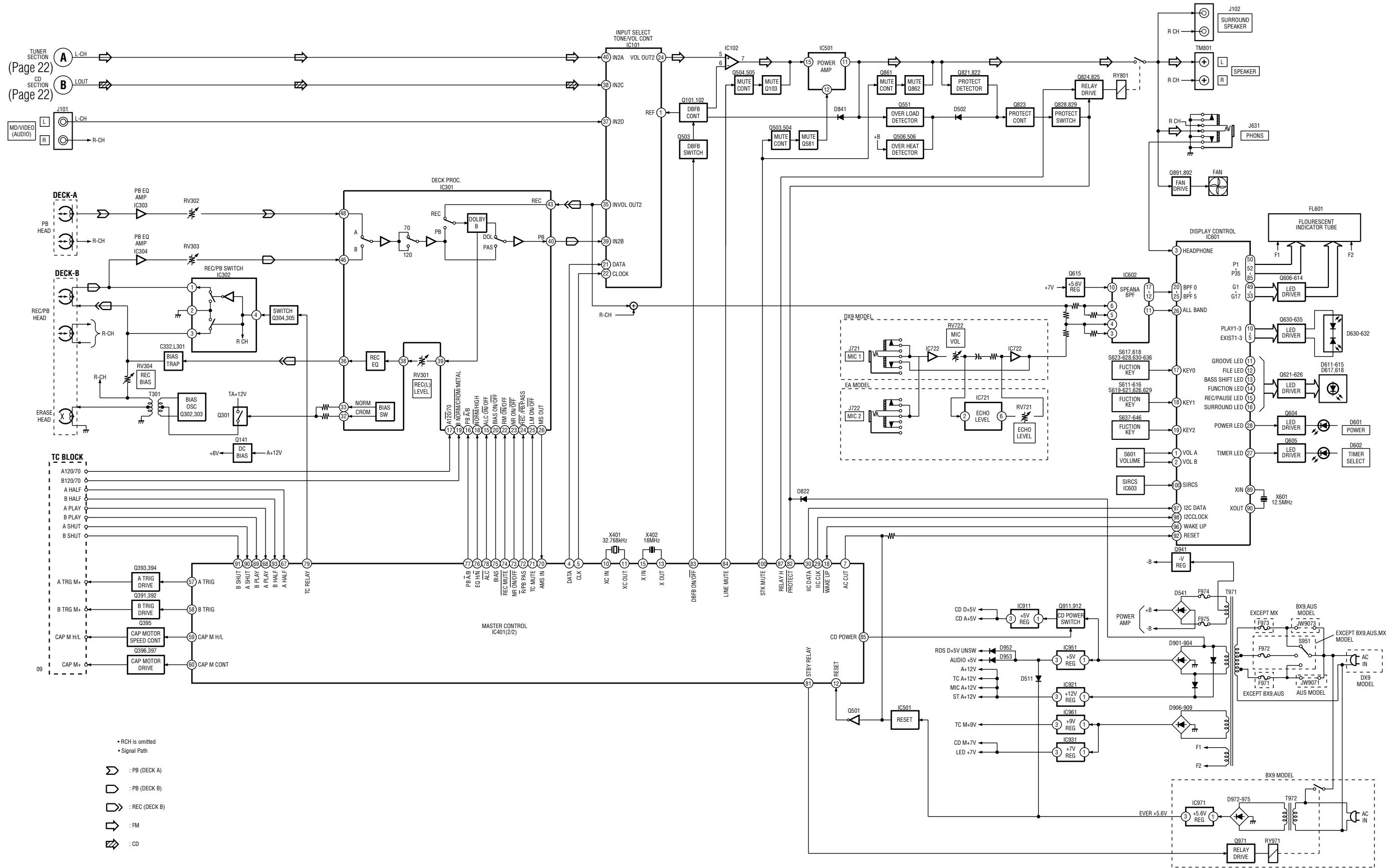
7-2. BLOCK DIAGRAMS  
- TUNER/CD SECTION -



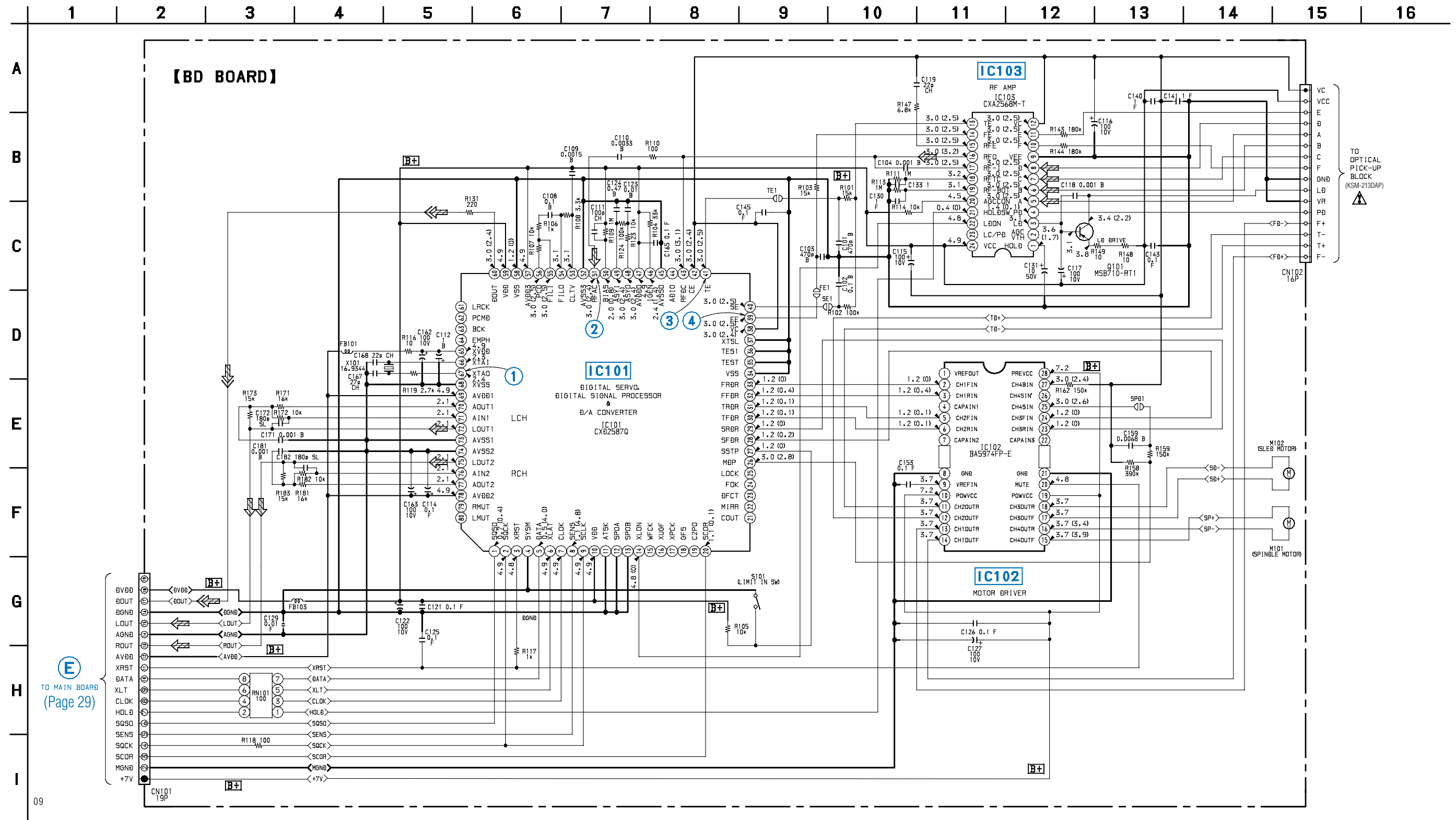
OPTICAL PICK-UP BLOCK  
(KSM-213DAP)



- MAIN SECTION -

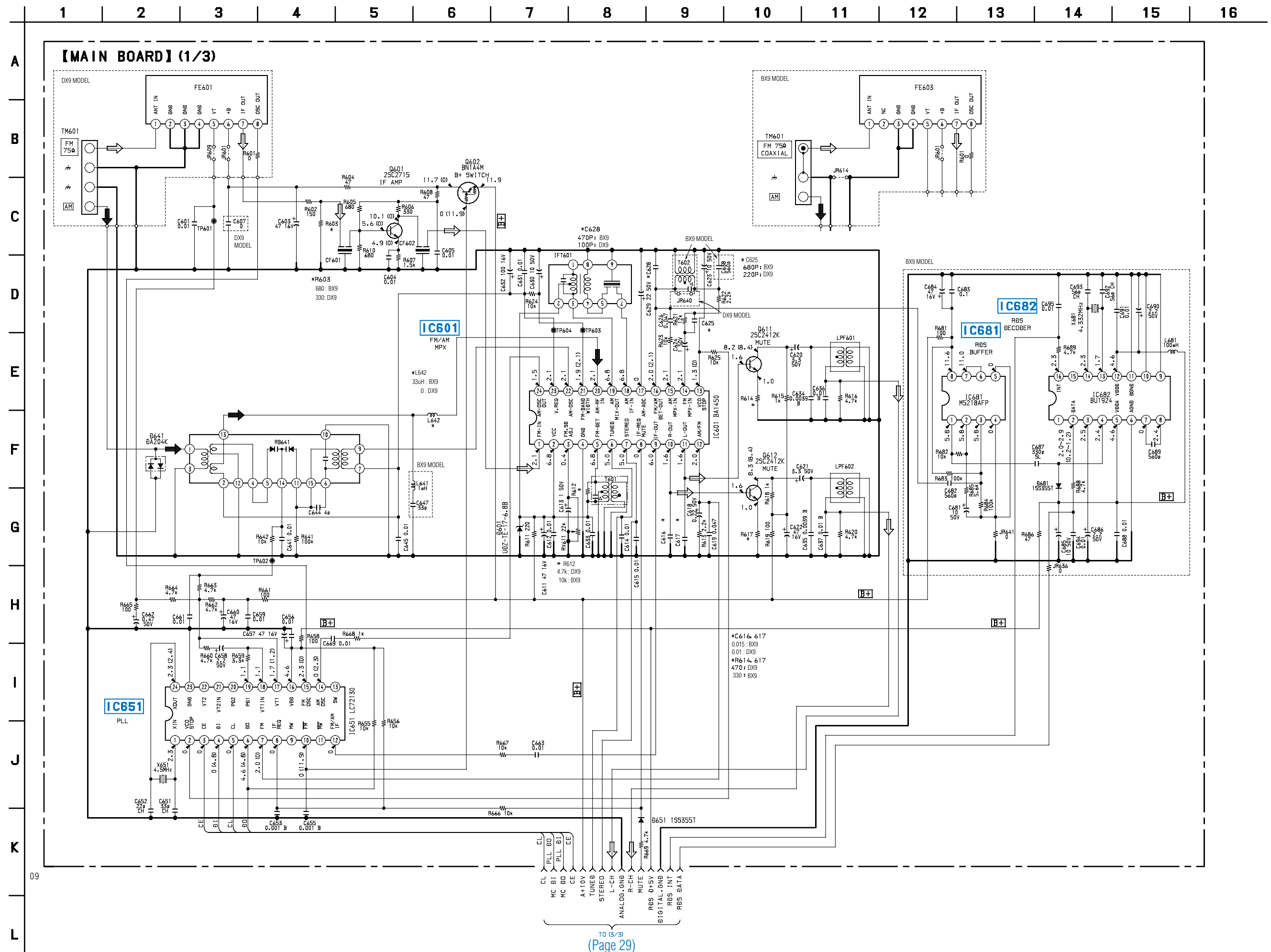


7-4. SCHEMATIC DIAGRAM – BD SECTION – • See page 21 for Waveforms. • See page 46 for IC Block Diagrams.

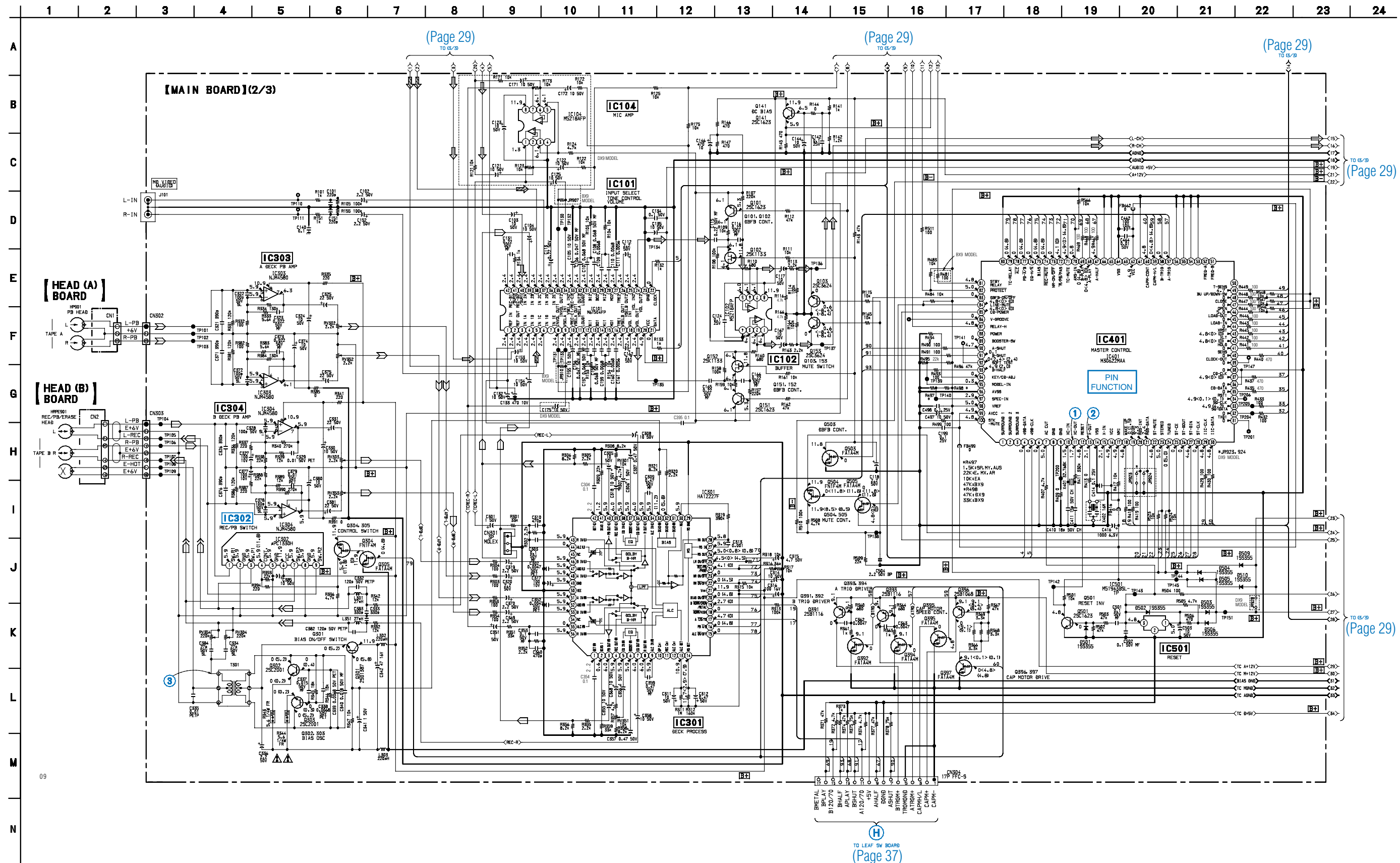




7-6. SCHEMATIC DIAGRAM – MAIN (1/3) SECTION – • See page 47 for IC Block Diagrams.



7-7. SCHEMATIC DIAGRAM – MAIN (2/3) SECTION – • See page 21 for Waveforms. • See page 44 for IC Pin Function Description. • See page 48 for IC Block Diagrams.



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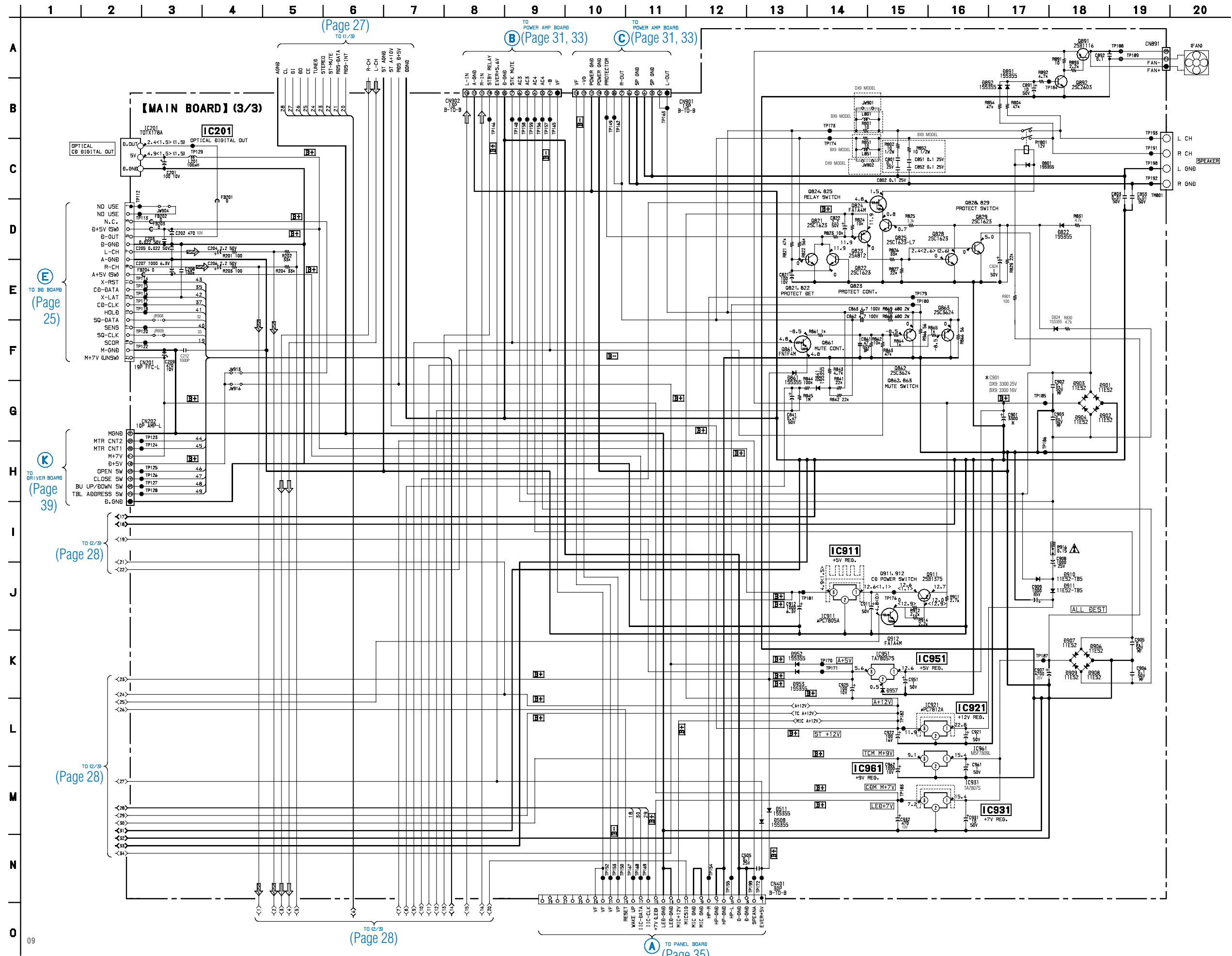
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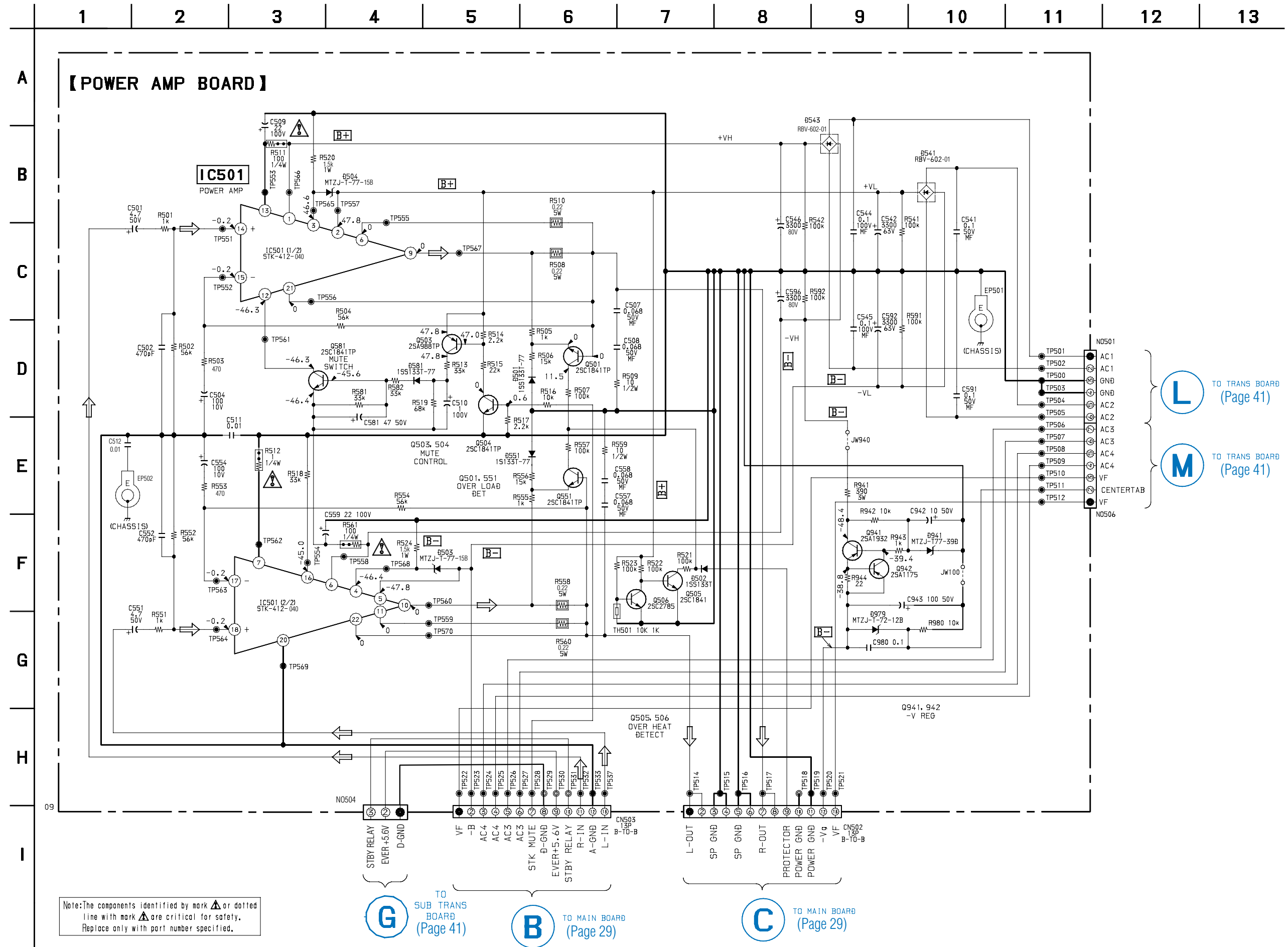
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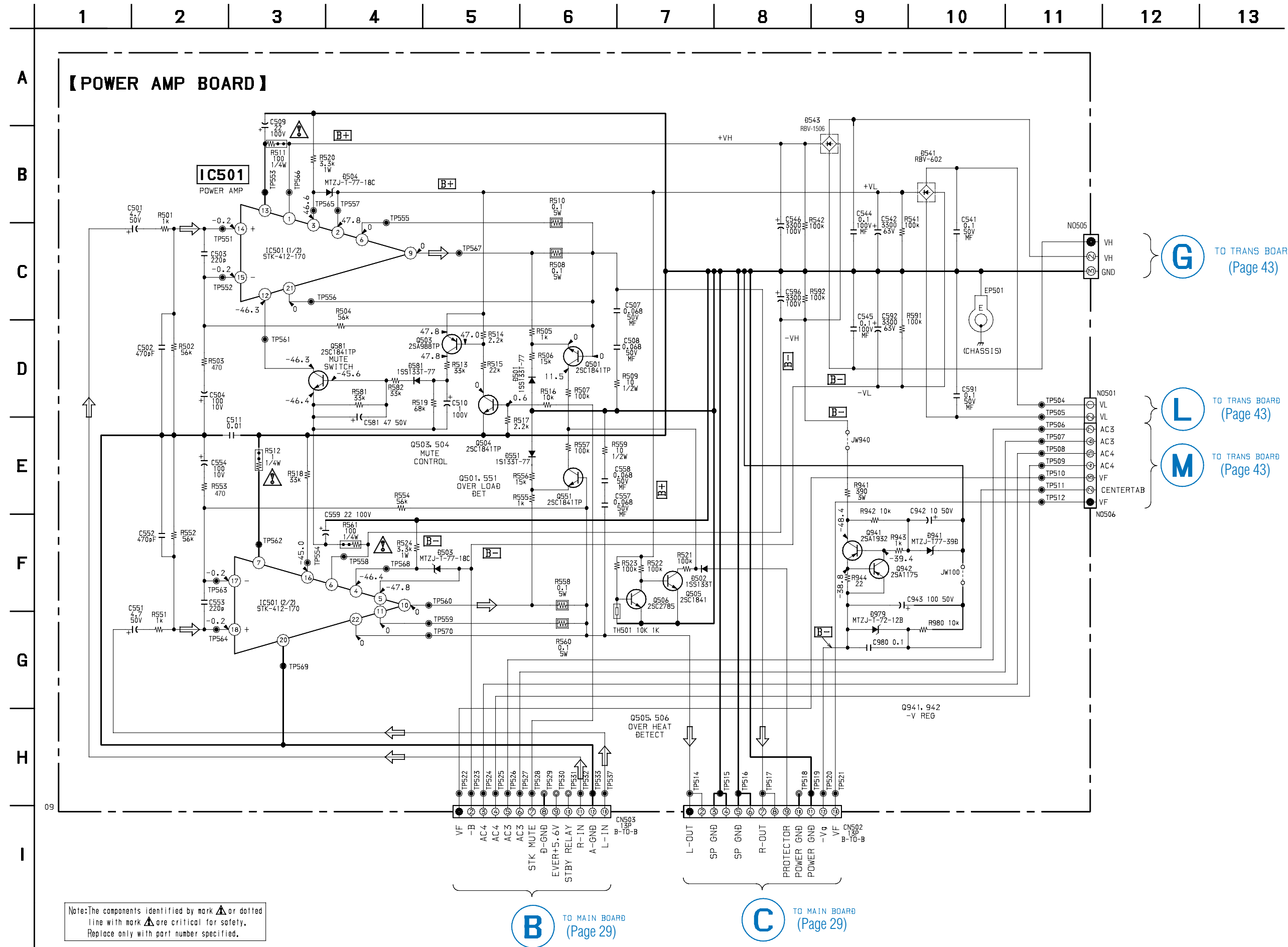
7-8. SCHEMATIC DIAGRAM – MAIN (3/3) SECTION –



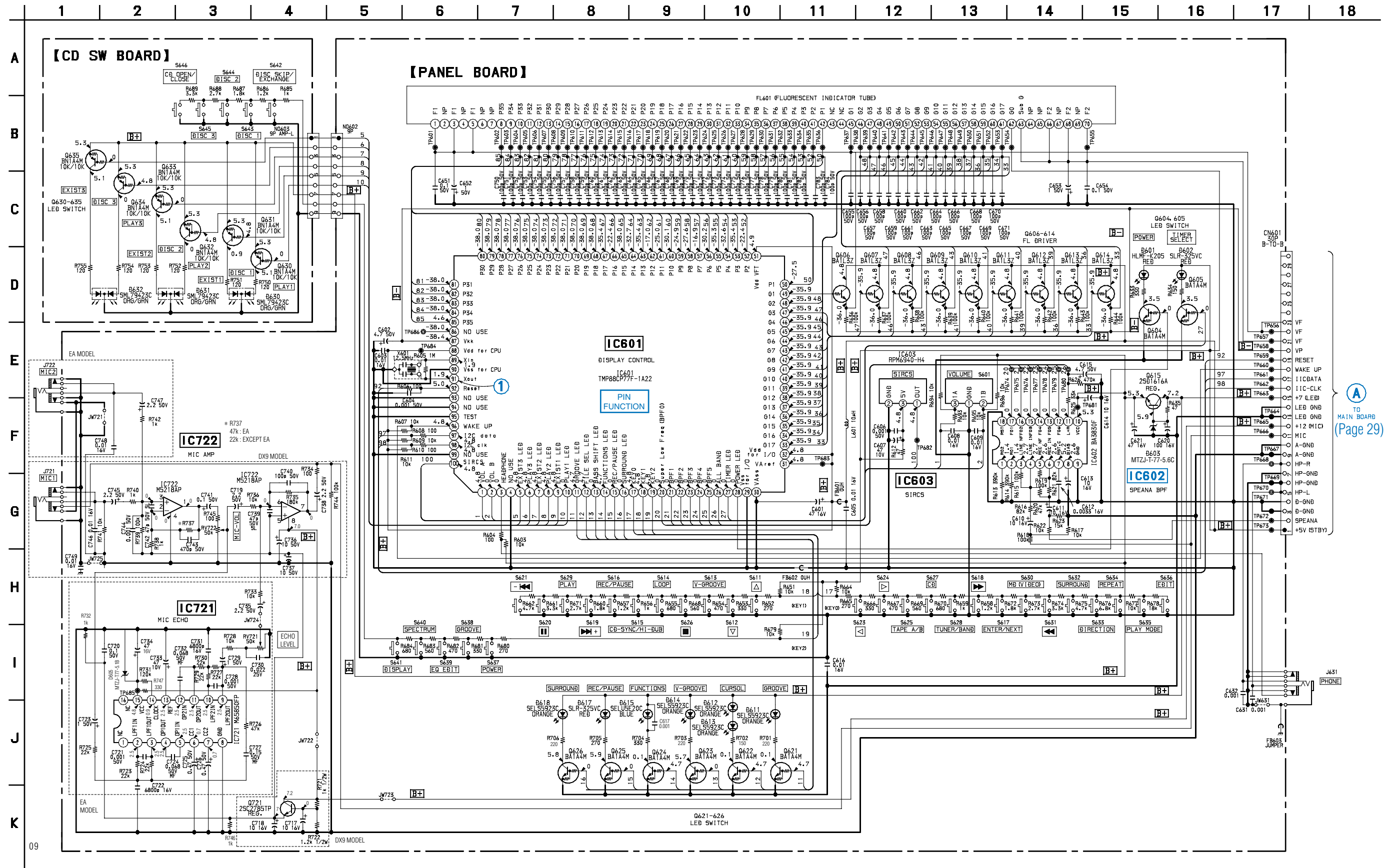
7-10. SCHEMATIC DIAGRAM – POWER AMP SECTION – (BX9 MODEL)



7-12. SCHEMATIC DIAGRAM – POWER AMP SECTION – (DX9 MODEL)

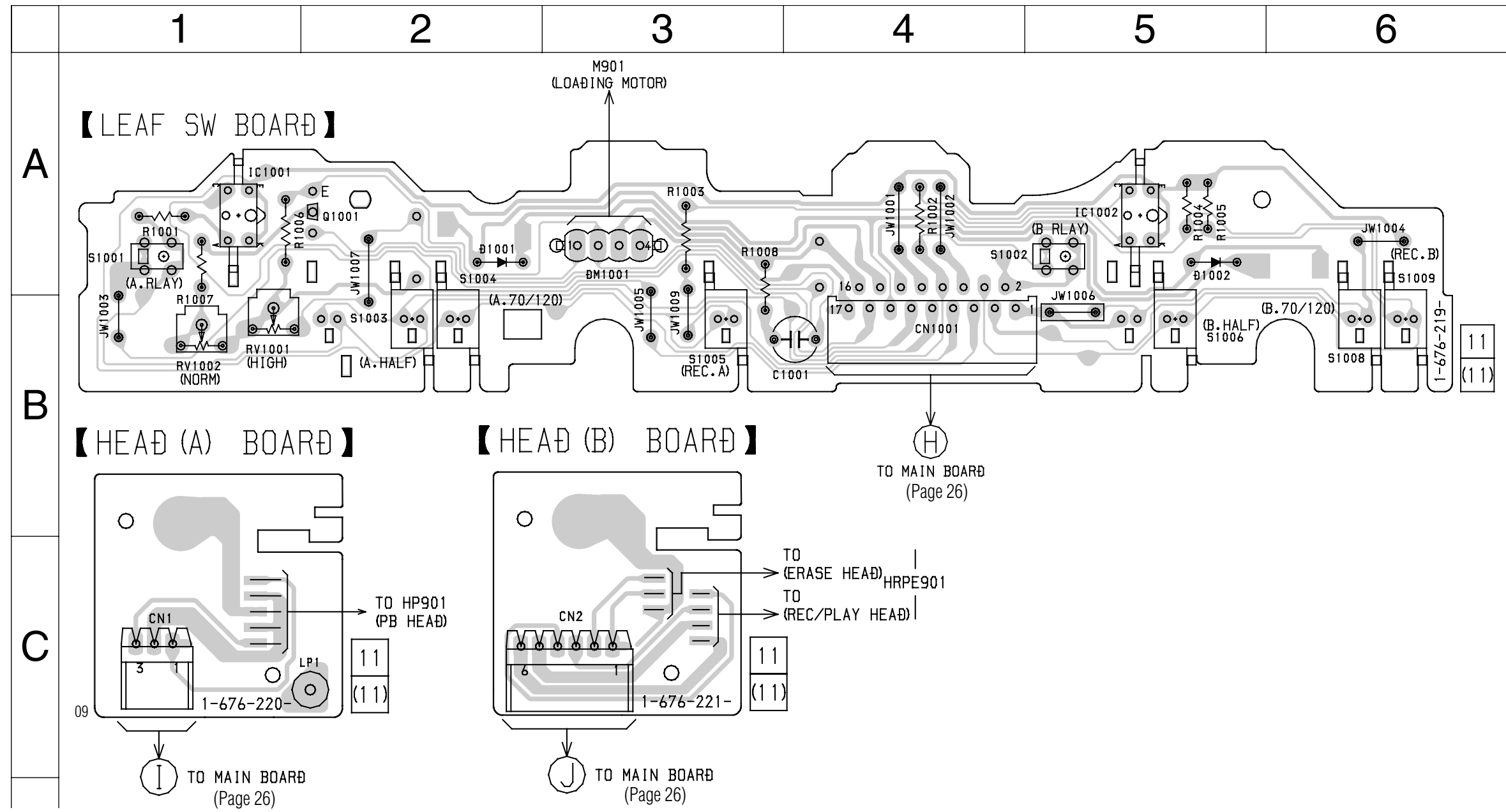


7-14. SCHEMATIC DIAGRAM – PANEL SECTION – • See page 21 for Waveforms. • See page 45 for IC Pin Function Description. • See page 47 for IC Block Diagrams.

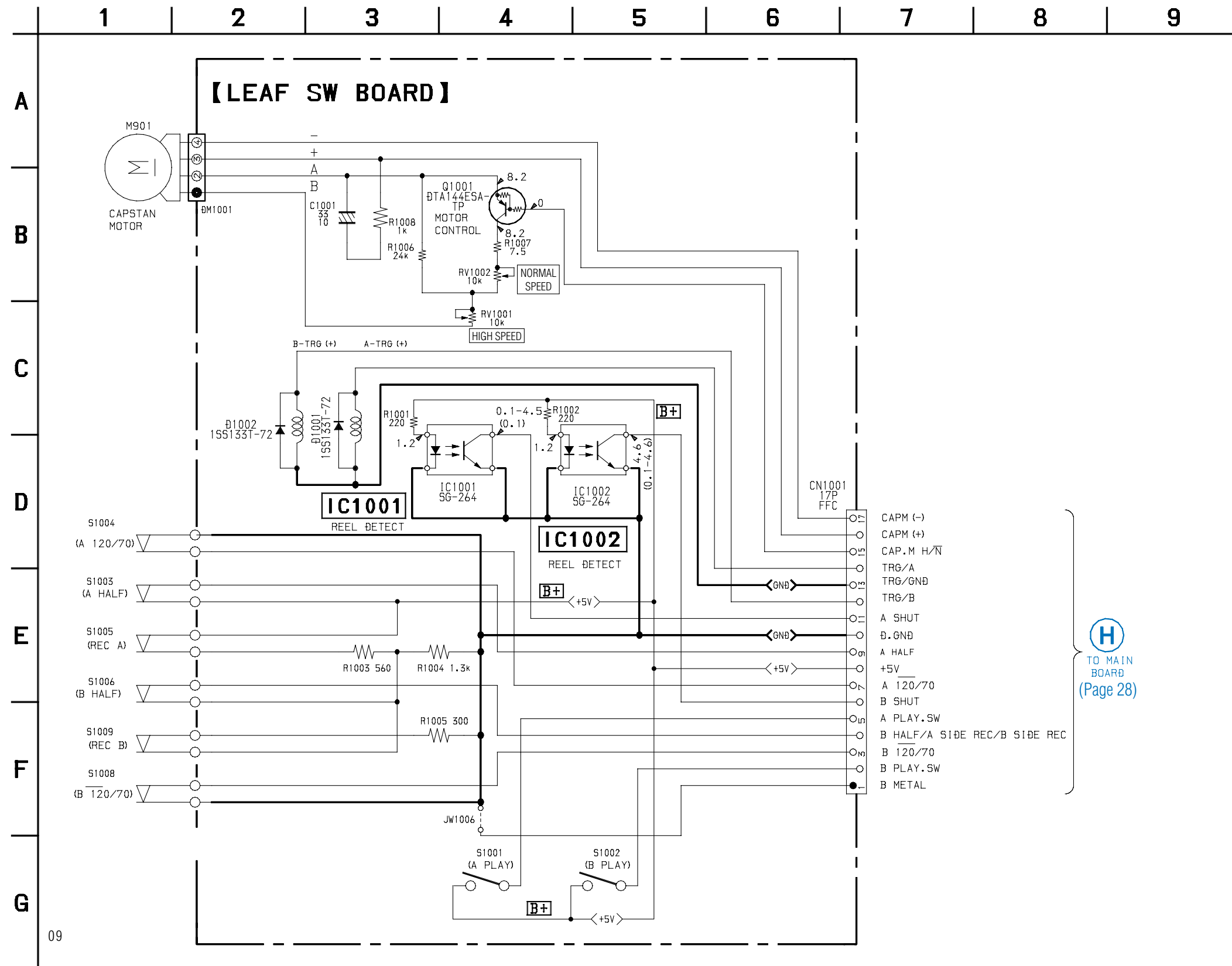


TO MAIN BOARD (Page 29)

7-15. PRINTED WIRING BOARD – LEAF SW SECTION – • See page 21 for Circuit Boards Location.

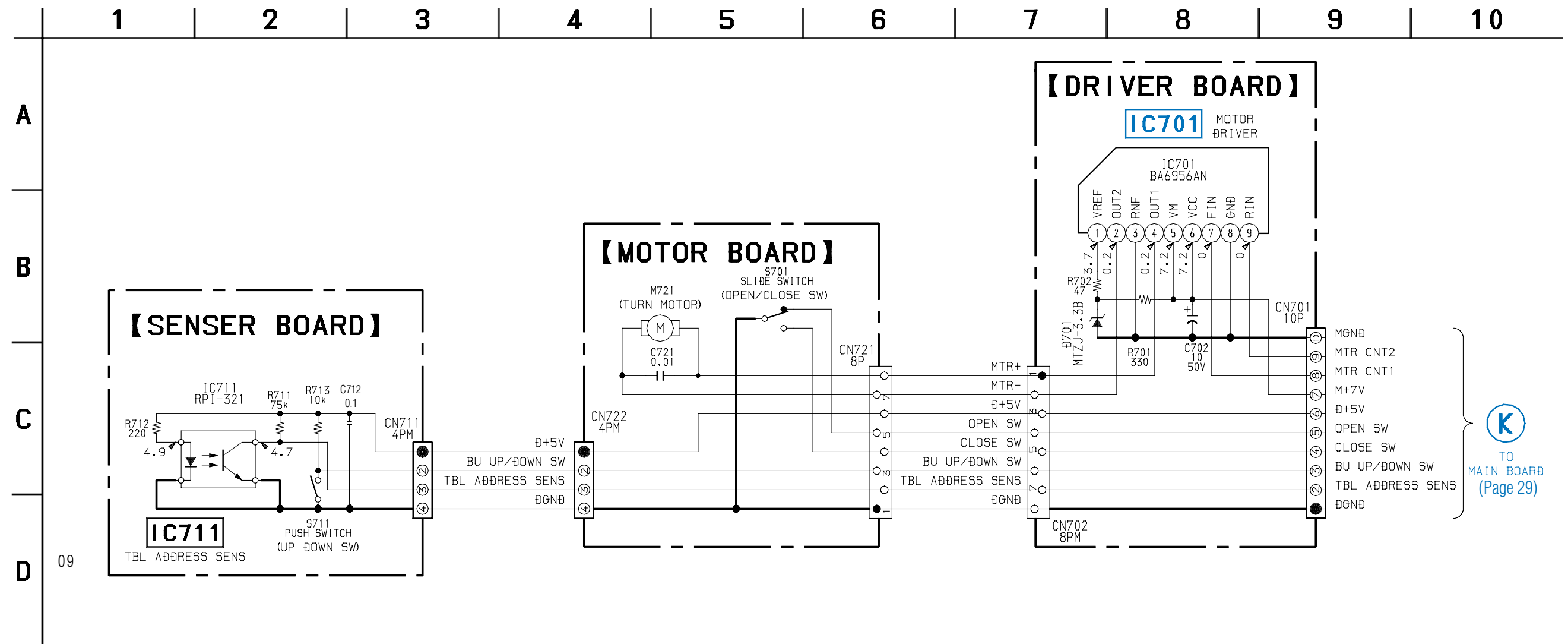


7-16. SCHEMATIC DIAGRAM – LEAF SW SECTION –

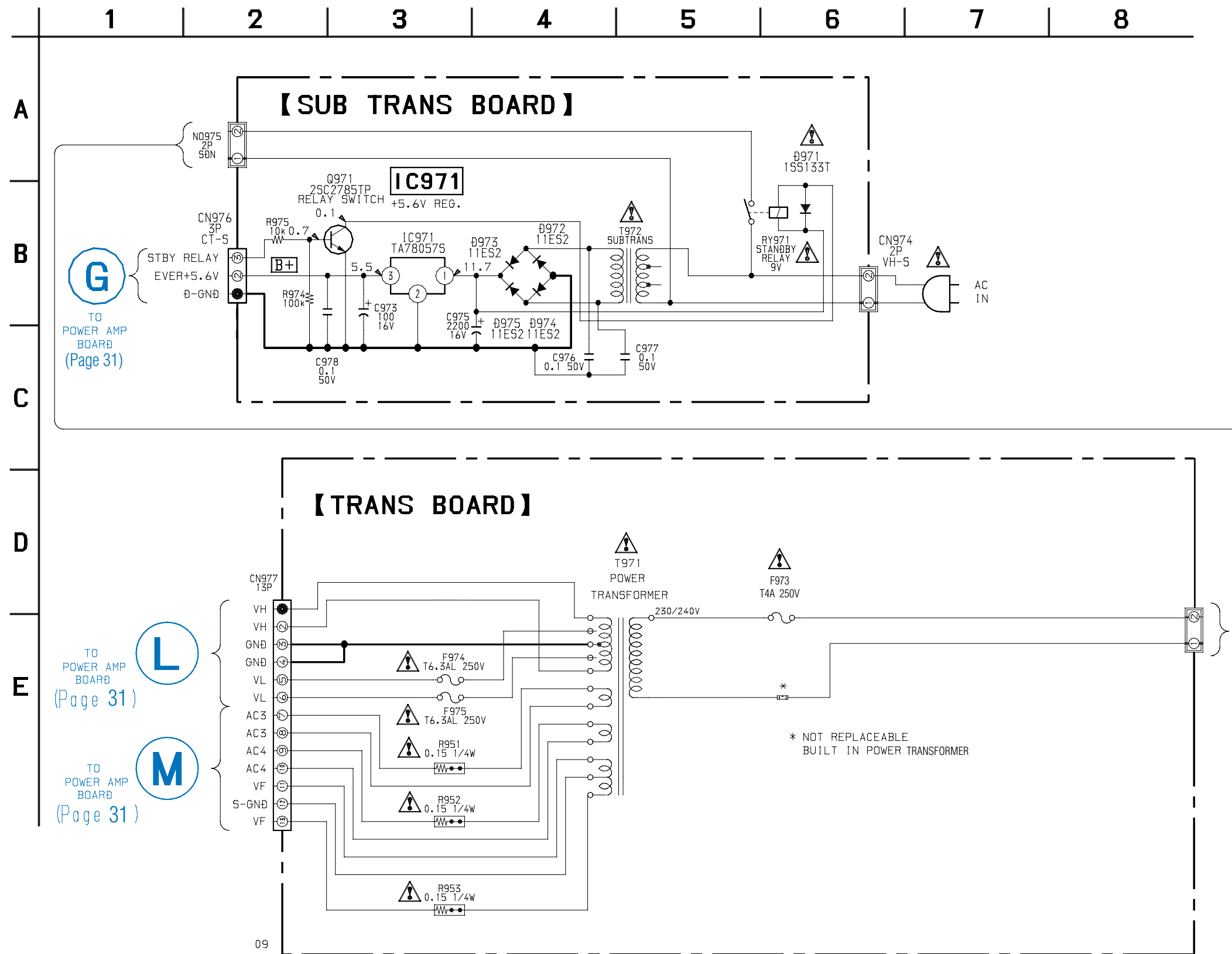




7-18. SCHEMATIC DIAGRAM – DRIVER SECTION –



7-20. SCHEMATIC DIAGRAM – TRANS SECTION – (BX9 MODEL)



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

7-22. SCHEMATIC DIAGRAM – TRANS SECTION – (DX9 MODEL)

