SECTION 3
MECHANICAL ADJUSTMENTS

Precaution

1. Clean the following parts with a denatured-alcohol-moistened swab:
   record/playback head, erase head, capstan, pinch roller, rubber belts, idlers
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head magnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. The adjustments should be performed with the rated power supply voltage (9 V) unless otherwise noted.

Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	2.95 – 6.86 mN • m (30 to 70 g • cm) (0.42 – 0.97 oz • inch)
FWD Back tension	CQ-102C	0.15 – 0.53 mN • m (1.5 to 5.5 g • cm) (0.021 – 0.076 oz • inch)
FF	CQ-201B	more than 5.88 mN • m (more than 60 g • cm) (more than 0.83 oz • inch)
REW	CQ-201B	more than 5.88 mN • m (more than 60 g • cm) (more than 0.83 oz • inch)

Tape Tension Measurement

Mode	Tension meter	Meter reading
FWD	CQ-403A	more than 100 g (more than 3.53 oz)

SECTION 4
ELECTRICAL ADJUSTMENTS

TAPE SECTION | 0 dB = 0.775V

- **Standard Output Level**

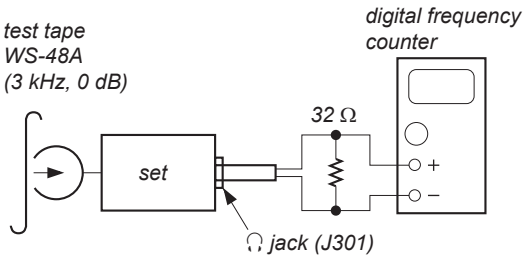
Output terminal	HP OUT
load impedance	32 Ω
output signal level	0.25 V (–10 dB)

- **Test Tape**

Tape	Signal	Used for
WS-48A	3 kHz, 0 dB	tape speed adjustment
P-4-A063	6.3 kHz, –10 dB	azimuth adjustment

Tape Speed Adjustment
Procedure:

Mode: playback



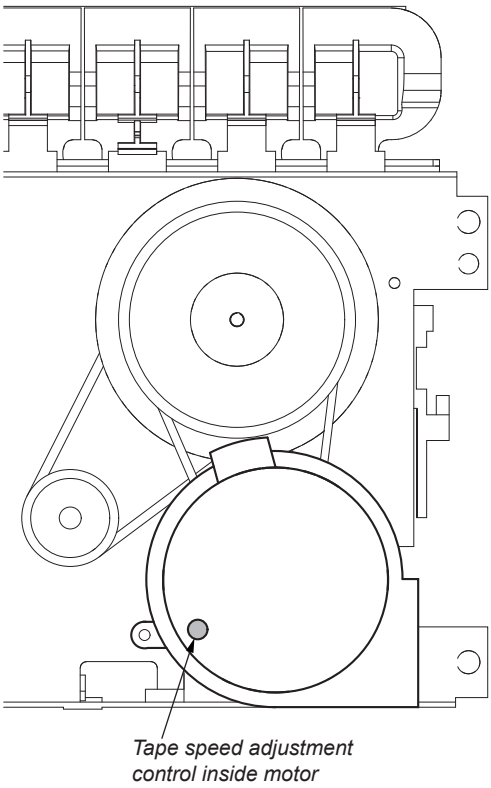
Adjust so that the value on the digital frequency counter is 3,000 Hz.

Specification Value:

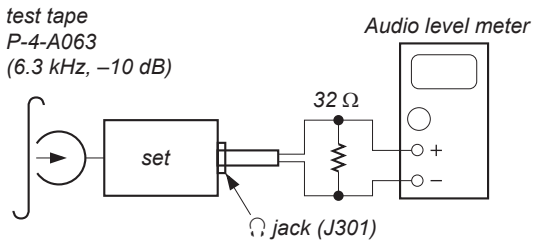
Digital frequency counter
2,910 to 3,090 Hz

Adjust so that the frequency at the beginning and that at the end of tape winding are between 2,910 to 3,090 Hz.

Adjustment Location:

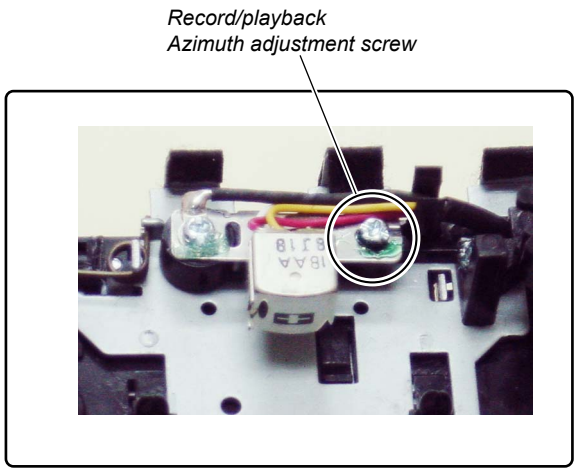


Record/Playback Head Azimuth Adjustment
Procedure:
Mode: playback



Play back the test tape (P-4-A063) and adjust a screw for Azimuth adjustment in the head right side so that the output becomes maximum. The headphone output level is a range of –7 dB from –15 dB. After the adjustment, apply suitable Locking compound to the part adjusted.

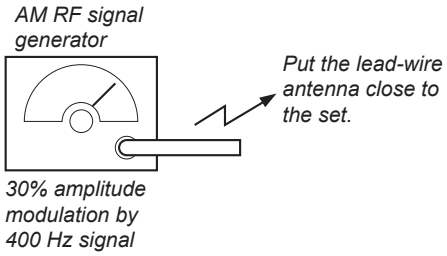
Adjustment Location:



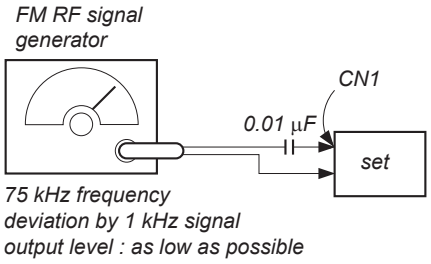
TUNER SECTION

0 dB = 1 μV

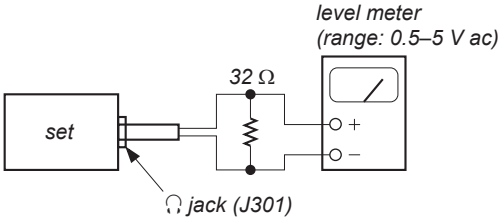
- **AM Section**
  Setting:
  RADIO BAND•AUTO PRESET button: AM



- **FM Section**
  Setting:
  RADIO BAND•AUTO PRESET button: FM



- **Connecting Level Meter (FM, AM)**



AM FREQUENCY COVERAGE CHECK		
Frequency Display	531 kHz	1,602 kHz
Adjustment Part	<confirmation>	

FM FREQUENCY COVERAGE CHECK		
Frequency Display	87.5 MHz	108 MHz
Adjustment Part	<confirmation>	

- Abbreviation
  AUS : Australian model
  KR : Korean model
  SP : Singapore model
  TH : Thai model
  TW : Taiwan model

CD SECTION

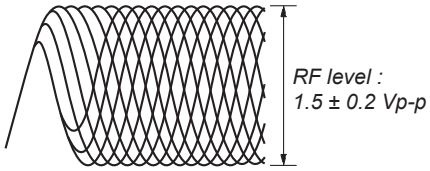
CD section adjustments are done automatically in this set.
In case of operation check, confirm that focus bias.

FOCUS BIAS CHECK

1. Connect the oscilloscope between IC801 pin ⑲ and pin ⑧ (or TP804 (RF) and TP711 (VREF)).
2. Insert the disc (PATD-012 (Tr 15)). (Part No. : 4-225-203-01)
3. Press the ► ❚❚ (CD) button.
4. Confirm that the oscilloscope waveform is as shown in the figure below. (eye pattern)
   A good eye pattern means that the diamond shape (◊) in the center of the waveform can be clearly distinguished.

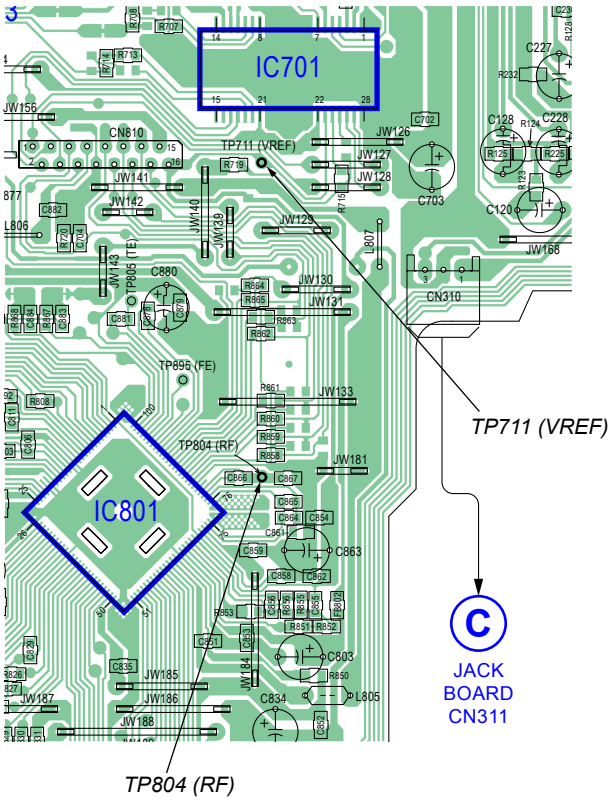
- RF signal reference waveform (eye pattern)

VOLT/DIV : 50 mV (10 : 1 probe in use)
TIME/DIV : 500 nS



When observing the eye pattern, set the oscilloscope for AC range and raise vertical sensitivity.

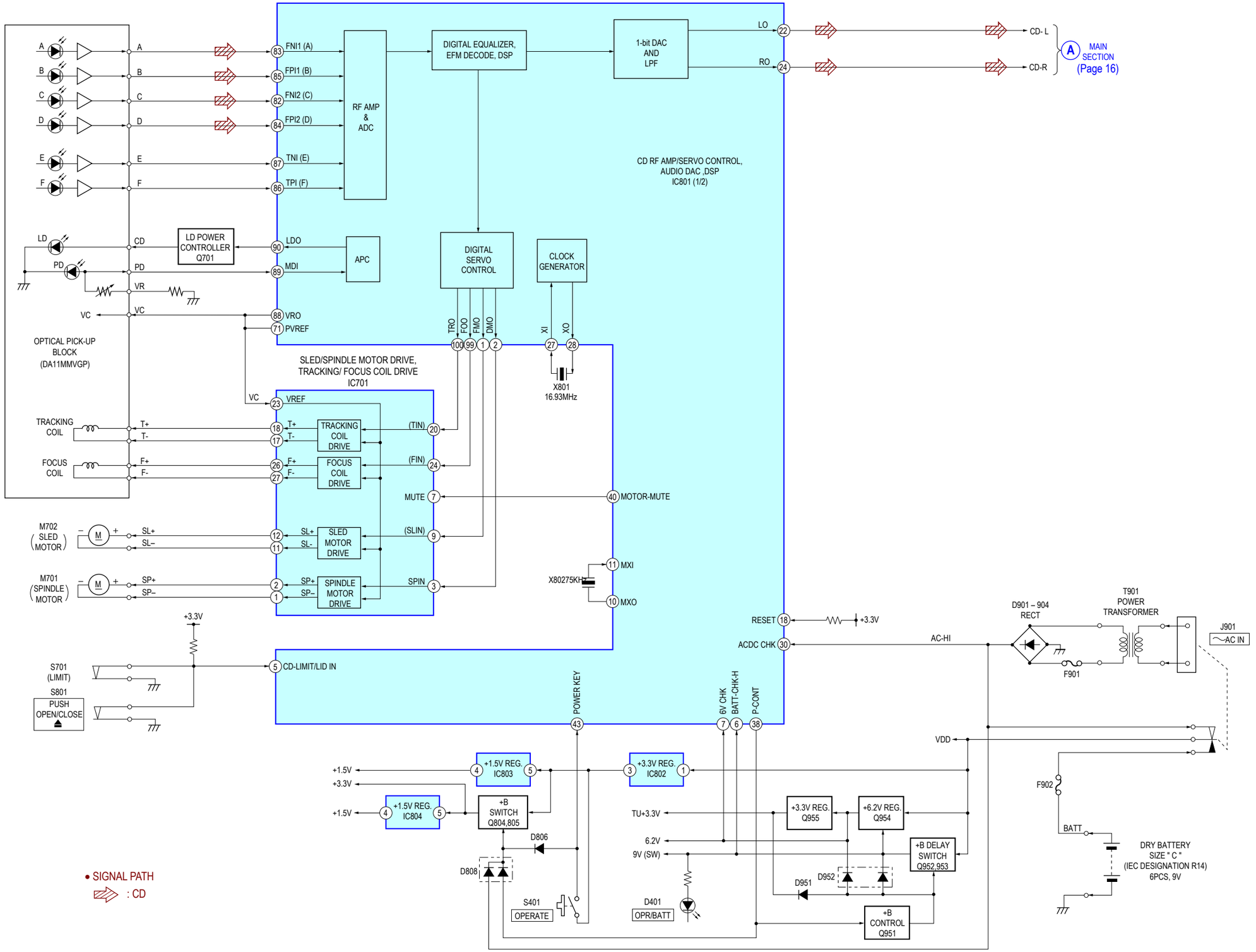
Test Point:
– MAIN BOARD (Conductor Side) –



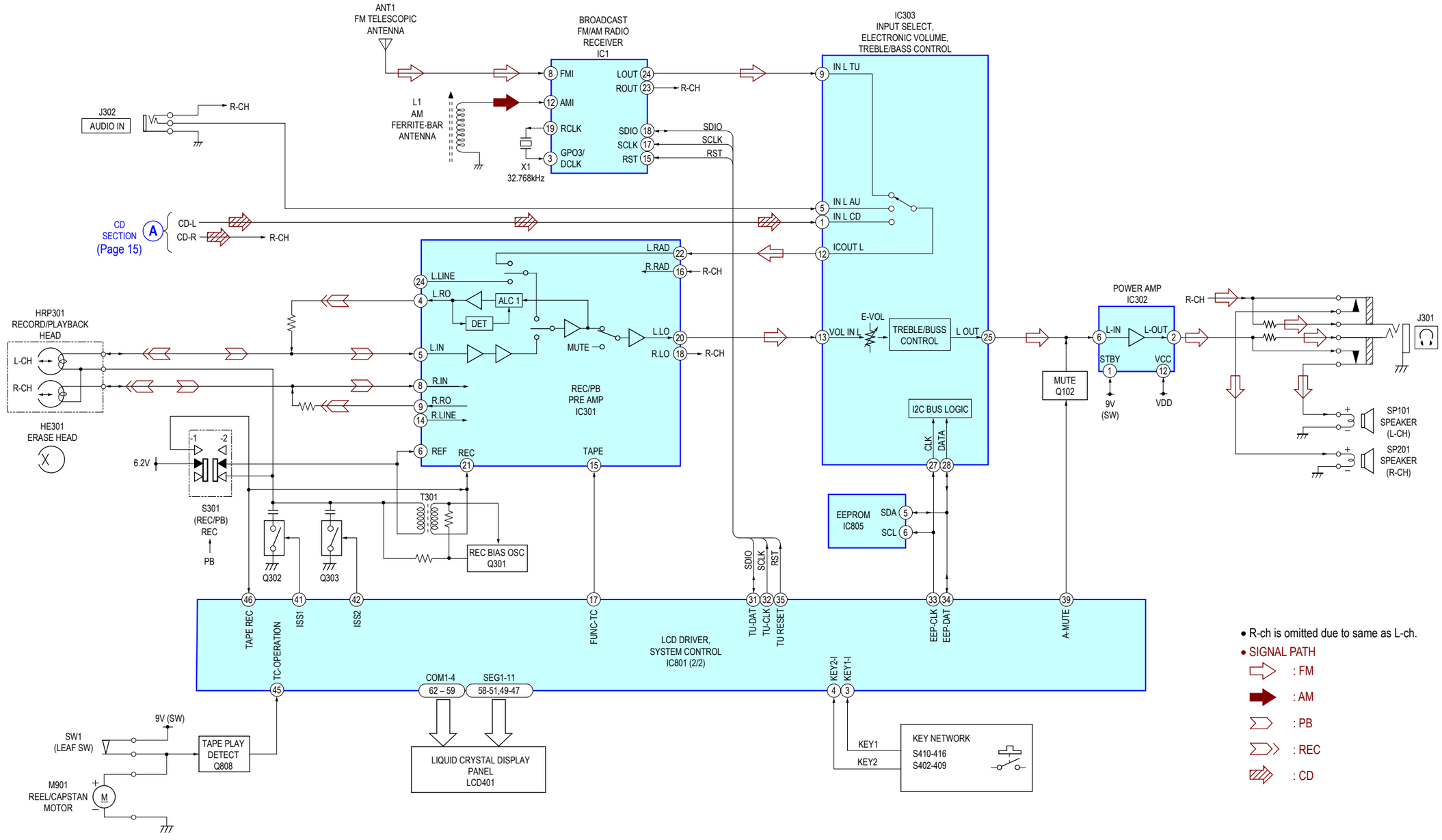
MEMO

SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM – CD Section –



5-2. BLOCK DIAGRAM – MAIN Section –



- R-ch is omitted due to same as L-ch.
- SIGNAL PATH
  - : FM
  - : AM
  - : PB
  - : REC
  - : CD

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

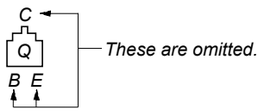
For Printed Wiring Boards.

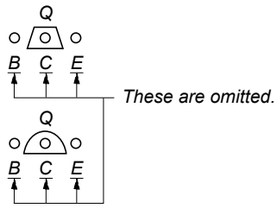
Note:

- o——: Parts extracted from the component side.
- ——: Parts extracted from the conductor side.
- ⊡←: Indicates side identified with part number.
- △ : Internal component.
- ▬: Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)

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

- Indication of transistor.





- Abbreviation
  AUS : Australian model
  KR : Korean model
  SP : Singapore model
  TH : Thai model
  TW : Taiwan model

For Schematic Diagrams.

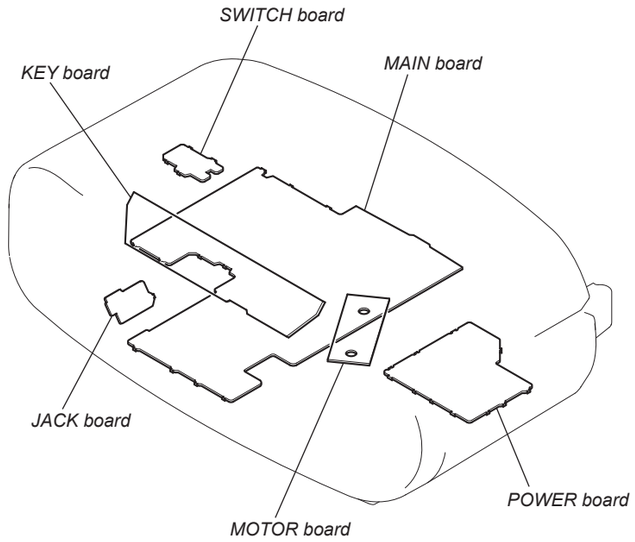
Note:

- All capacitors are in μF unless otherwise noted. (p: pF) 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.
- ▭: Panel designation.

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

- ▬: B+ Line.
- ▭: Adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FM
  ( ): AM
  < >: PB
  ‹‹ ›› : REC
  [ ]: CD PLAY
- Voltages are taken with 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.
  ⇨ : FM
  ➡ : AM
  ⇨ : PB
  ⇨ : REC
  ⇨ : CD
- Abbreviation
  AUS : Australian model
  KR : Korean model
  SP : Singapore model
  TH : Thai model
  TW : Taiwan model

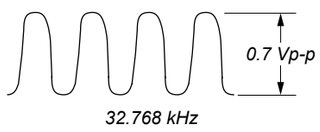
- **Circuit Boards Location**



- **Waveforms**

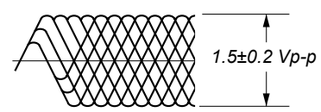
– MAIN Board –

① IC1 ⑲ (RCLK)
– TUNER MODE –



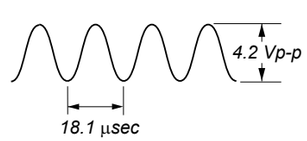
200 mV/DIV, 10 μs/DIV

④ IC801 ㊼ (RFO)
– CD PLAY –



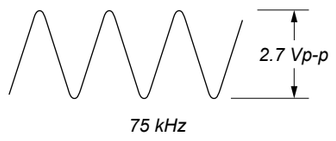
500 mV/DIV, 0.5 μs/DIV

⑦ Q301 Ⓒ (REC)



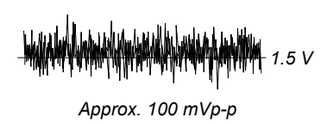
1 V/DIV, 10 μs/DIV

② IC801 ⑩ (MXO)



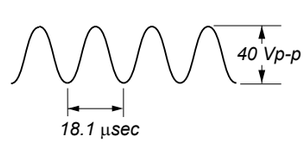
1 V/DIV, 5 μs/DIV

⑤ IC801 ㊺ (FEI)
– CD PLAY –



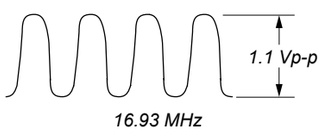
100 mV/DIV, 5 ms/DIV

⑧ HRP301 (YEL)



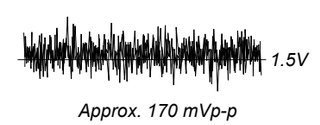
10 V/DIV, 10 μs/DIV

③ IC801 ㉘ (XO)
– CD PLAY –



1 V/DIV, 20 ns/DIV

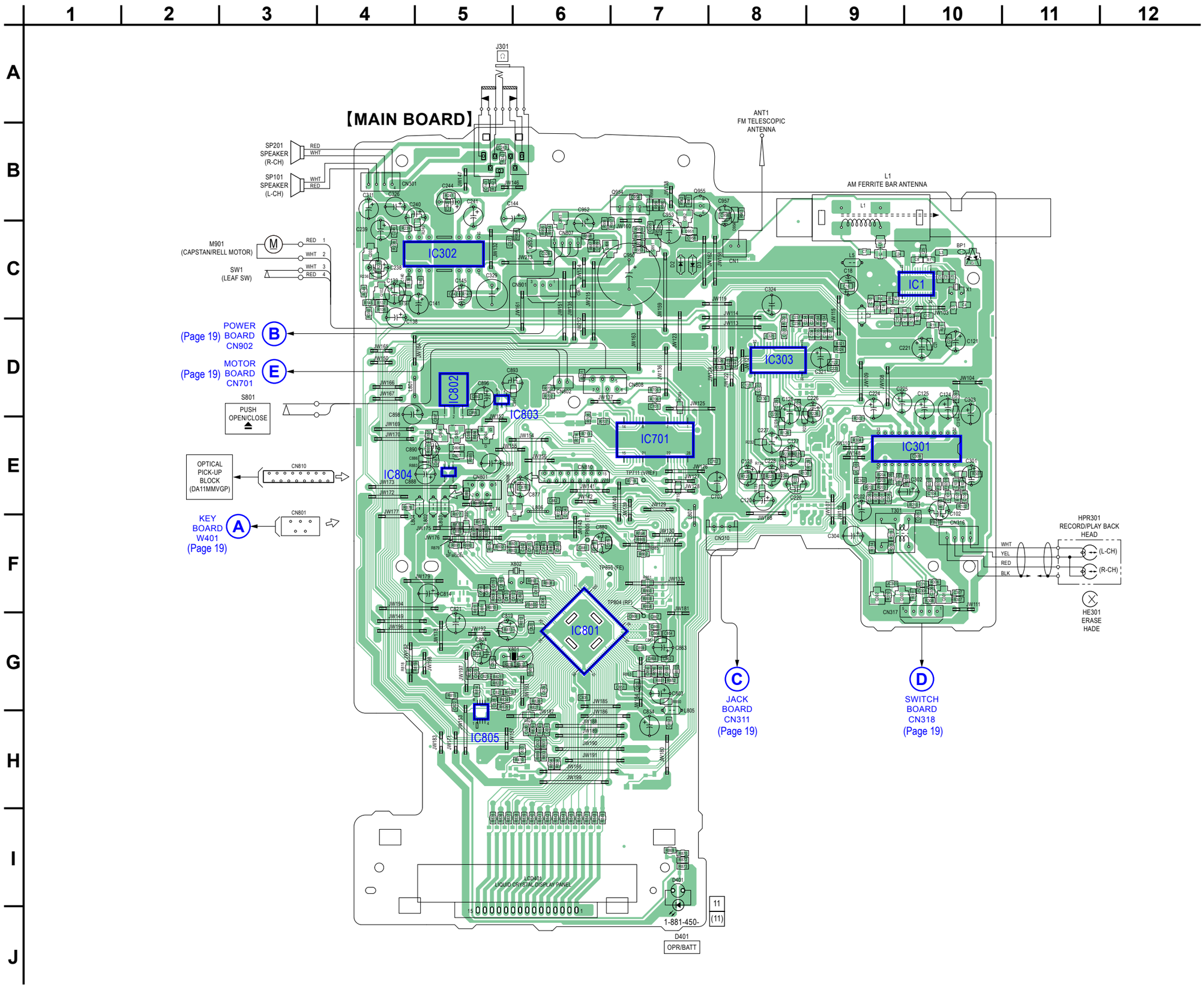
⑥ IC801 ㊻ (TEI)
– CD PLAY –



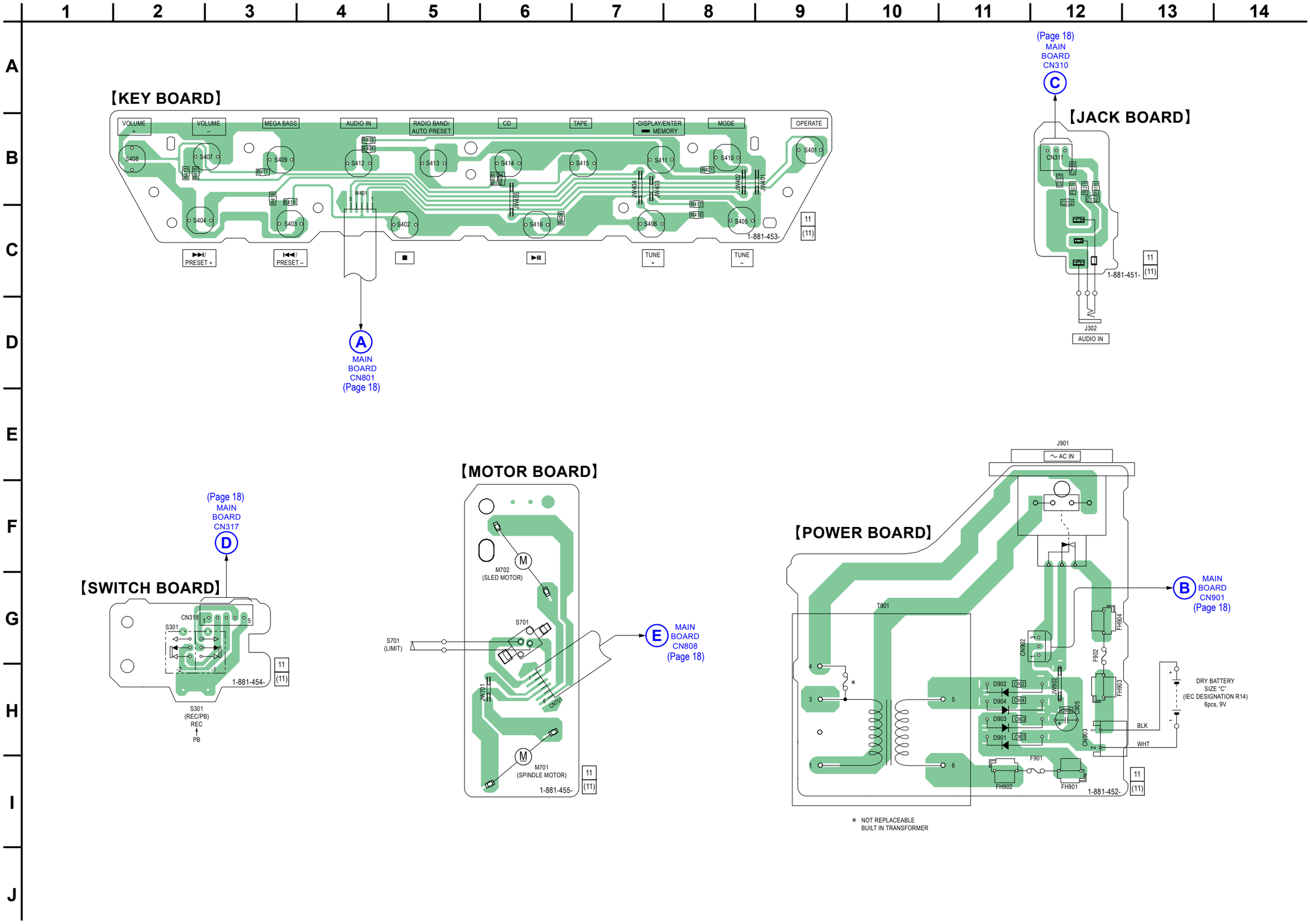
200 mV/DIV, 5 ms/DIV

5-3. PRINTED WIRING BOARD – MAIN Section –

• See page 17 for Circuit Boards Location. • : Uses unleaded solder.



5-4. PRINTED WIRING BOARDS – KEY, POWER Section – • See page 17 for Circuit Boards Location. • : Uses unleaded solder.



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

• See page 17 for waveforms. • See page 25, 26 for IC Block Diagrams. • See page 28 for IC Pin Function Description of IC801.