HCD-H991AV

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
PX Model

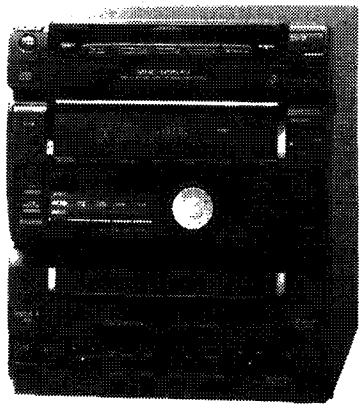


Photo: E model

HCD-H991AV is the tuner, deck, CD and amplifier section in MHC-991AV/G99AV.

CD SECTION	Model Name Using Similar Mechanism	HCD-H771/H771D
	CD Mechanism Type	CDM38-5BD19
	Base Unit Type	BU-5BD19
	Optical Pick-up Type	KSS-213BA/F-NP
TAPE DECK SECTION	Model Name Using Similar Mechanism	HCD-H771/H771D
	Tape Transport Mechanism Type	TCM-220WR2E

SPECIFICATIONS

For the U.S. model
AUDIO POWER SPECIFICATIONS
POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 8 ohm loads, both channels driven, from 70 – 20,000 Hz; rated 100 watts per channel minimum RMS power, with no more than 0.9 % total harmonic distortion from 250 milliwatts to rated output (FRONT SPEAKER).

CD player section

System: Compact disc and digital audio system
Laser: Semiconductor laser (λ = 780 nm)
Emission duration: continnous
Laser output: Max. 44.6μ W*
* 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 DIGITAL OUT OPTICAL
(Square optical connector jack, rear panel)
Wavelength 600 nm
Output Level – 18 dBm

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 ohm unbalanced
Intermediate frequency
10.7 MHz

AM tuner section
Tuning range
US, Canadian models:
AM: 531 – 1,710 kHz (with the tuning interval set at 9 kHz)
530 – 1,710 kHz (with the tuning interval set at 10 kHz)
German, Italian models:
AM: 531 – 1,602 kHz (with the interval set at 9 kHz)
AEP, UK models:
MW: 531 – 1,602 kHz (with the interval set at 9 kHz)
LW: 153 – 279 kHz (with the interval set at 3 kHz)
Australian, Argentine models:
AM: 531 – 1,602 kHz (with the tuning interval set at 9 kHz)
530 – 1,710 kHz (with the tuning interval set at 10 kHz)

— Continue on next page —

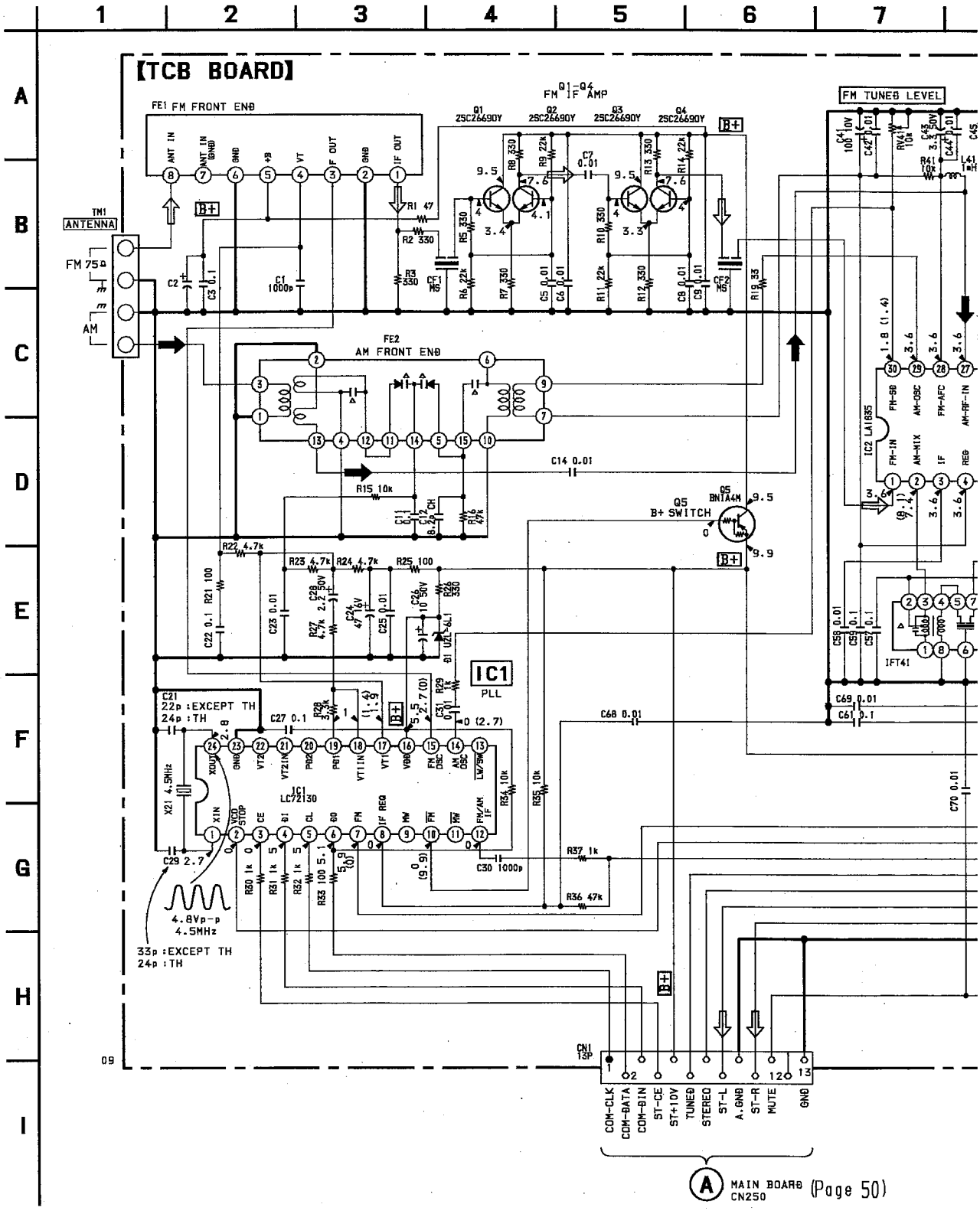
MICROFILM

COMPACT DISC DECK RECEIVER

SONY®

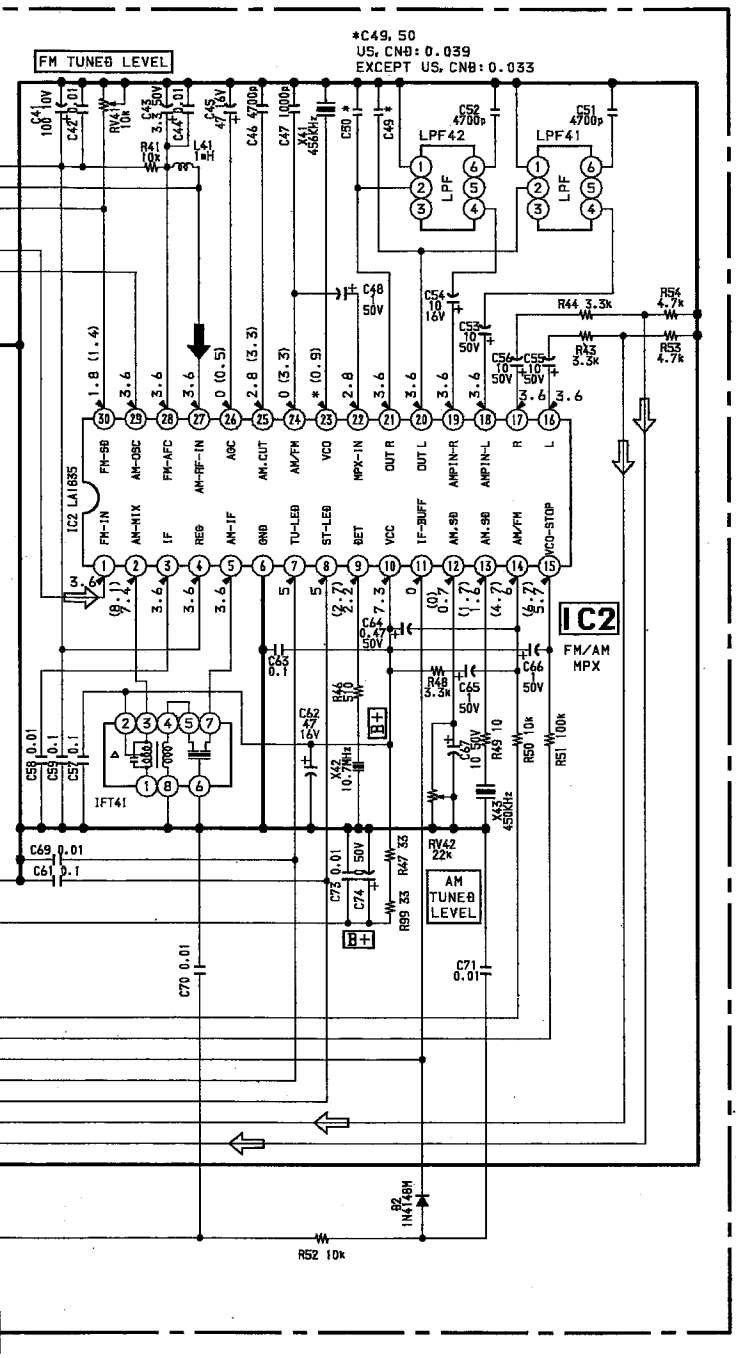
6-4. SCHEMATIC DIAGRAM — TUNER SECTION — (US, CND, E2, AR, AUS, TH MODEL)

• See page 44 for IC Block Diagrams.



• **Semiconductor Location**

Ref. No.	Location
D1	F-2
D2	E-3
IC1	F-3
IC2	C-3
Q1	E-2
Q2	E-2
Q3	D-2
Q4	D-2
Q5	D-3

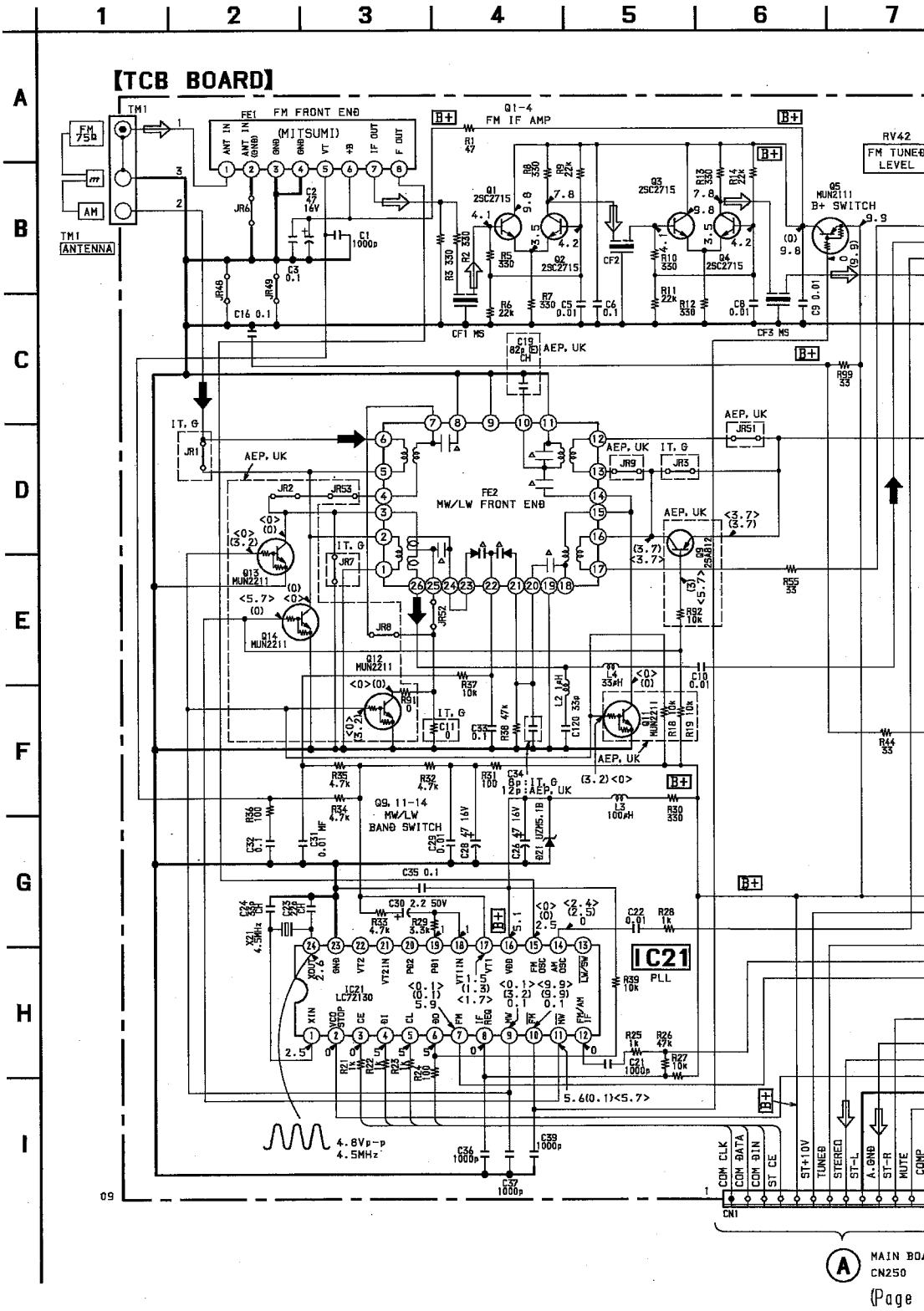


NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B+ : B+ Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FM
  ( ): AM
  * : can not be measured.
- Voltages are taken with a VOM (Input impedance 10MΩ).
  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.
- Abbreviation
  CND: Canadian model.
  AR : Argentine model.
  AUS: Australian model.
  TH : Thailand model.
  E2 : Without SW tuner model.
- Signal path.
  ⇨ : FM
  ➡ : AM

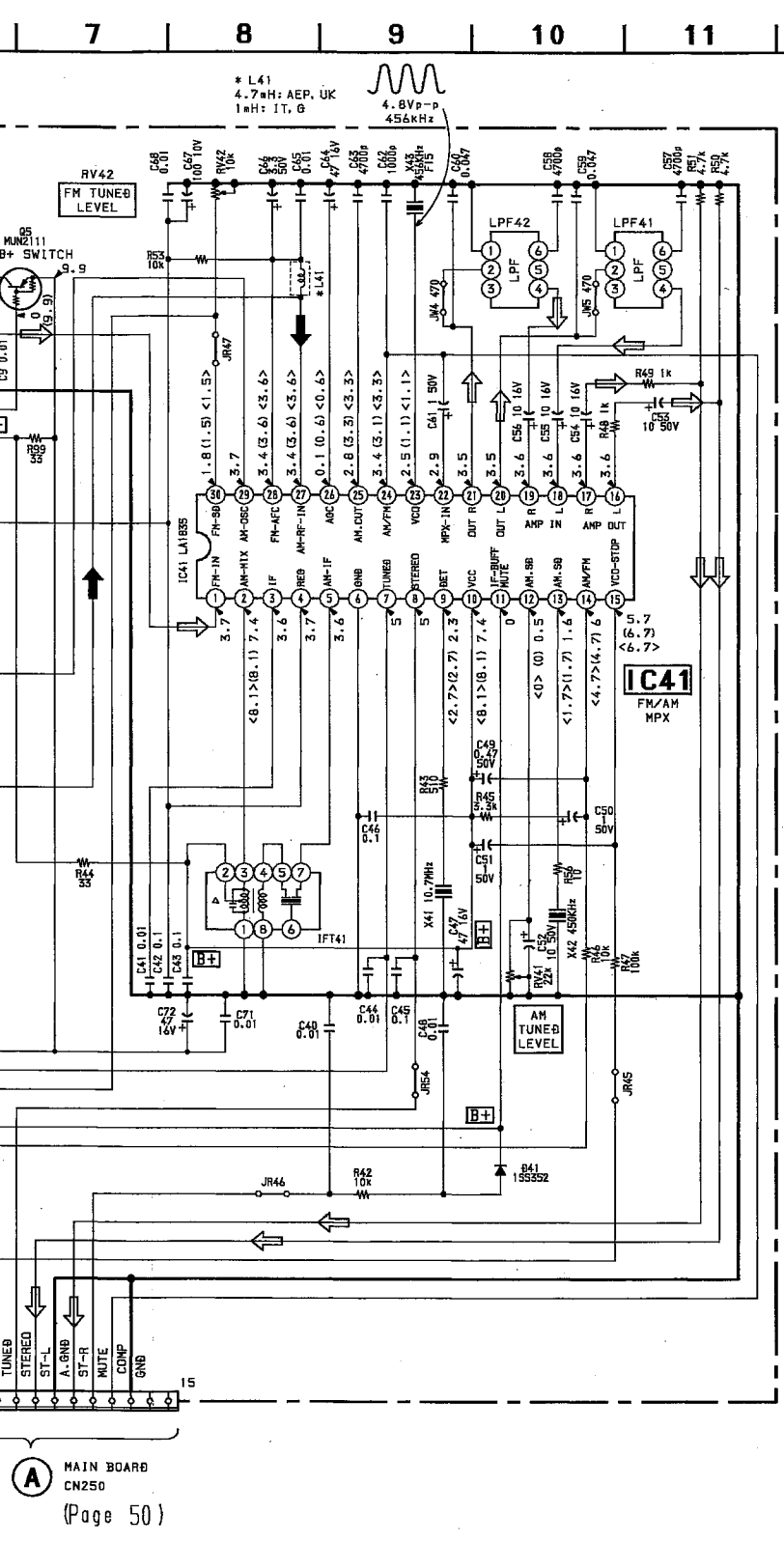
(Page 50)

6-6. SCHEMATIC DIAGRAM — TUNER SECTION — (AEP, UK, G, IT MODEL)



- **Semiconductor Location**

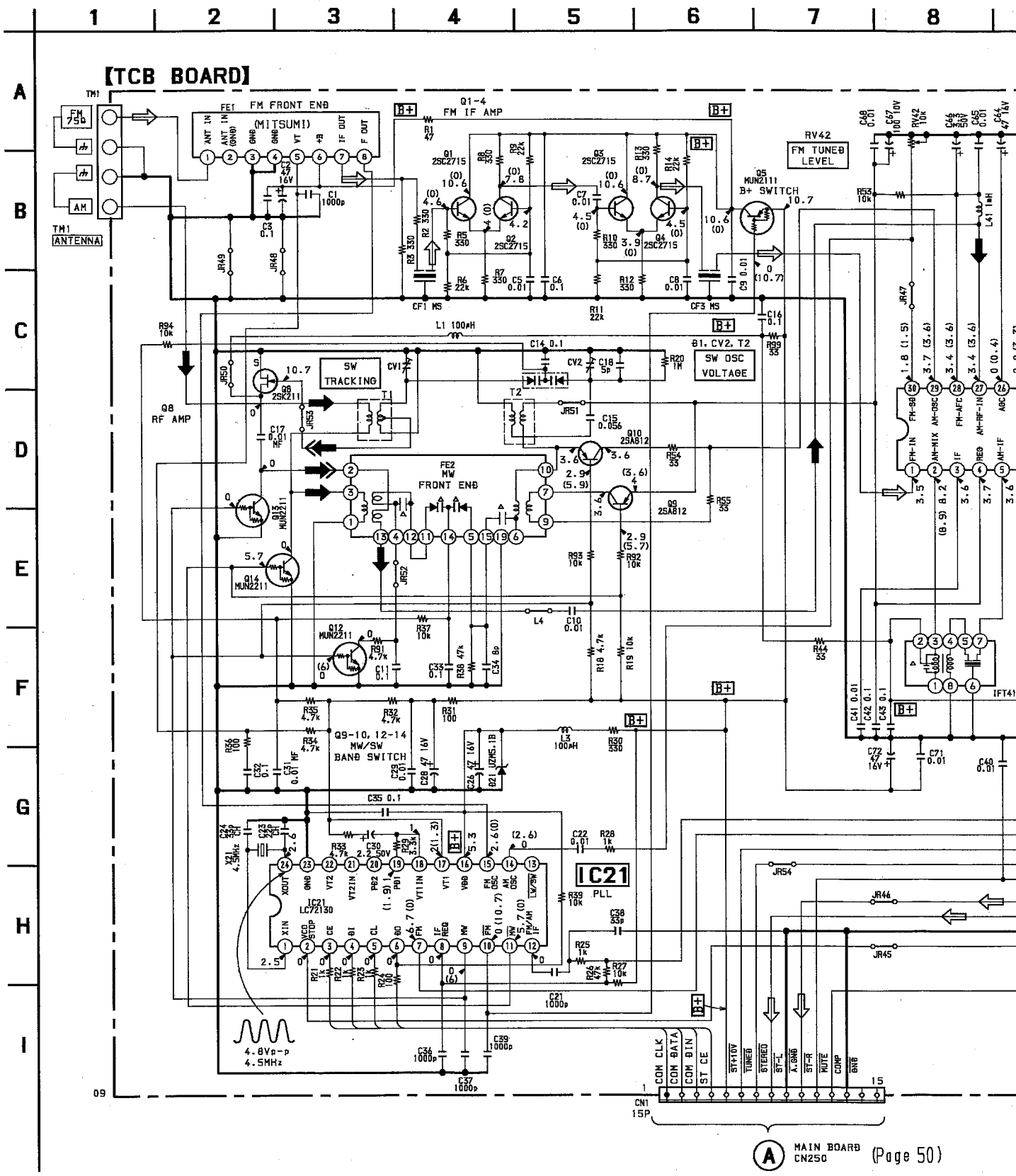
Ref. No.	Location
D21	G-1
D41	G-3
IC21	G-2
IC41	D-4
Q1	E-2
Q2	E-2
Q3	E-3
Q4	E-2
Q5	D-2
Q9	C-2
Q11	B-4
Q12	B-4
Q13	B-3
Q14	B-3



NOTE

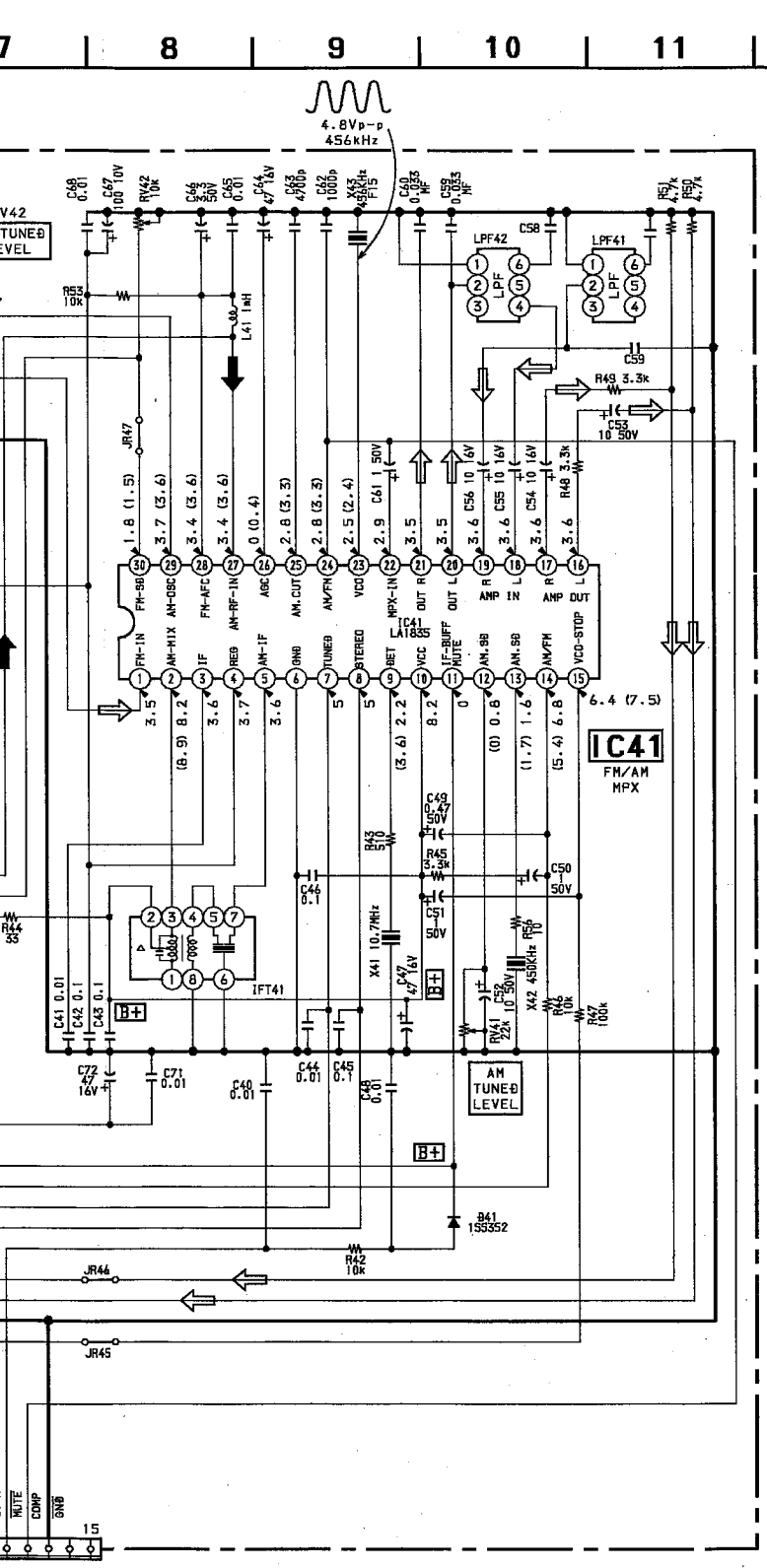
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ :internal component.
- ▭ :panel designation.
- B+ :B+ Line.
- ▭ :adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FM
  ( ): MW
  < >: LW
- Voltages are taken with a VOM (Input impedance 10MΩ). 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.
- Abbreviation
  G :German model.
  IT :Italian model.
- Signal path.
  ⇨ :FM
  ➡ :AM

6-8. SCHEMATIC DIAGRAM — TUNER SECTION — (E3, EA, HK, SP, MY, IA, PX MODEL)



miconductor cation

No.	Location
	C-3
	G-1
	G-4
1	G-2
1	E-5
	F-2
	F-3
	E-3
	E-3
	E-3
	B-3
	D-3
0	D-4
2	B-5
3	B-4
4	B-3



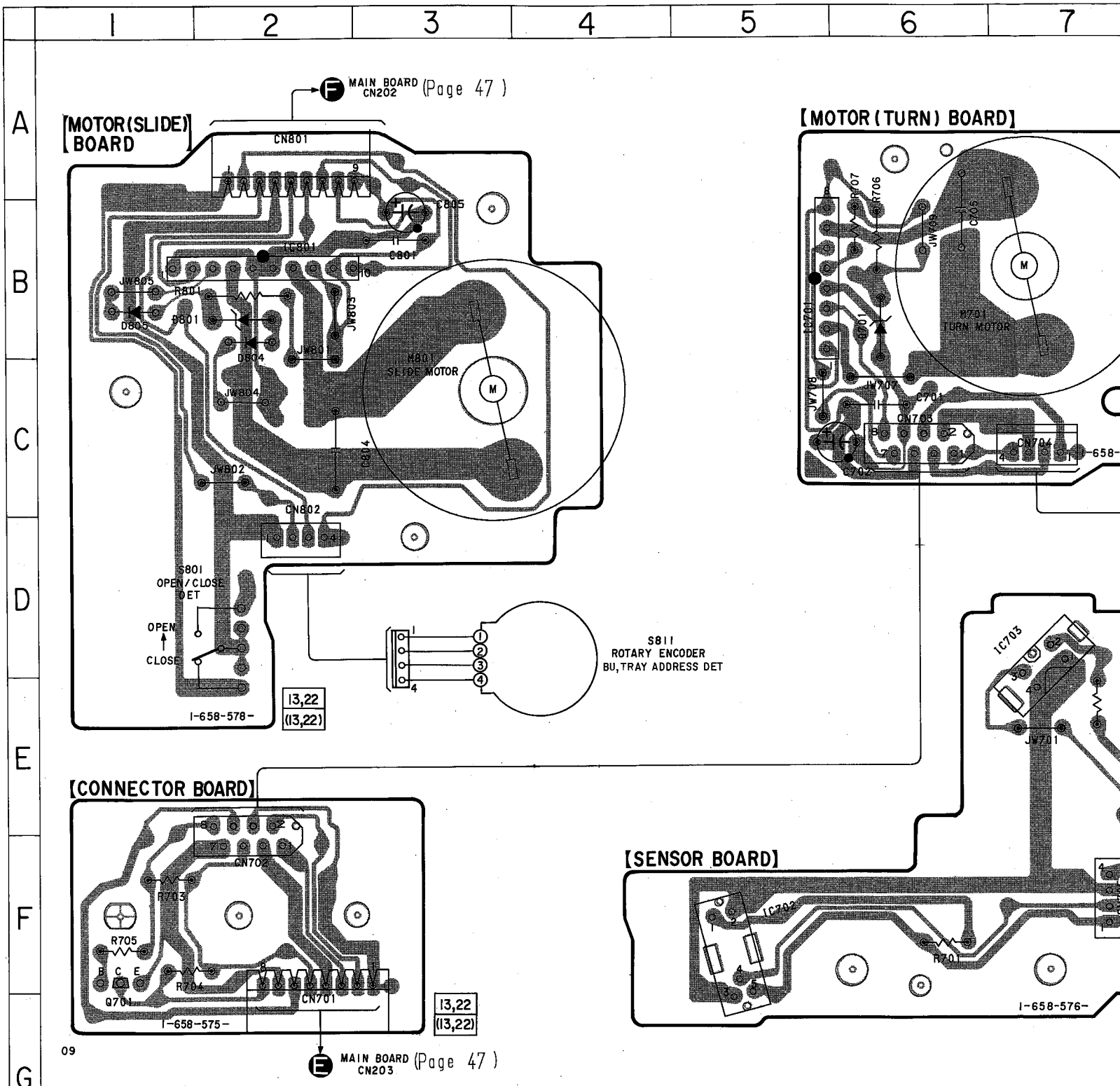
NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B+ : B+ Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FM
  ( ) : AM
- Voltages are taken with a VOM (Input impedance 10MΩ).
  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.
- Abbreviation
  EA : Saudi Arabia model.
  HK : Hong Kong model.
  SP : Singapore model.
  MY : Malaysia model.
  IA : Indonesian model.
  E3 : With SW tuner model.
- Signal path.
  ⇨ : FM
  ➡ : MW
  ➡ : SW

N BOARD 250 (Page 50)

6-9. PRINTED WIRING BOARD — CD MOTOR SECTION —

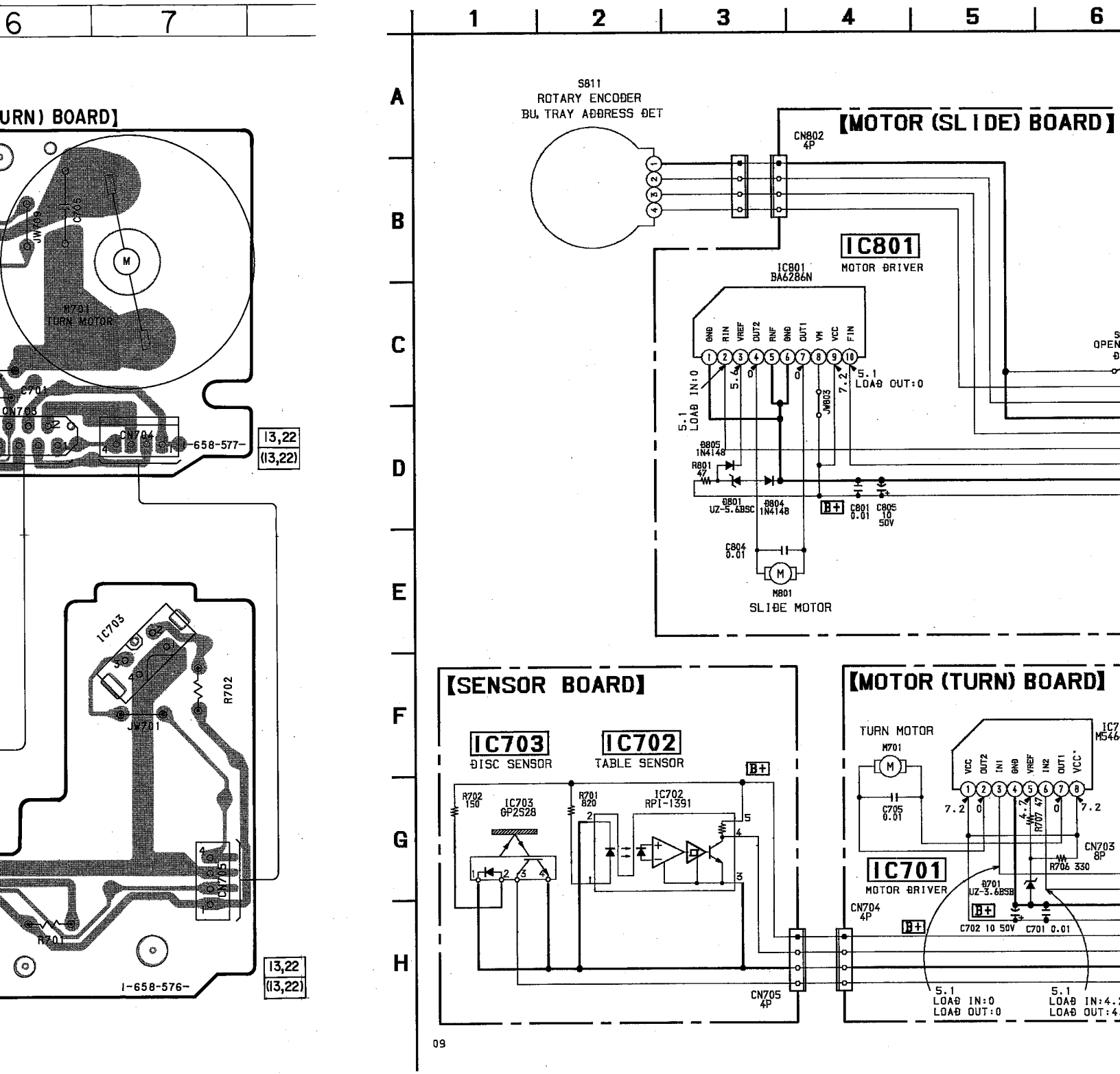
• See page 18 for Circuit Boards Location.



Note:

- ⟜—— : parts extracted from the component side.
- ▬ : Pattern from the side which enable seeing.

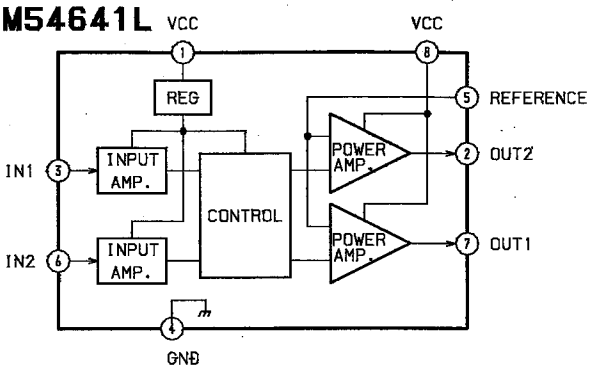
6-10. SCHEMATIC DIAGRAM — CD MOTOR SECTION —



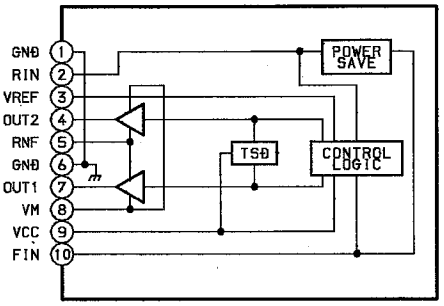
side.
eeing.

5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

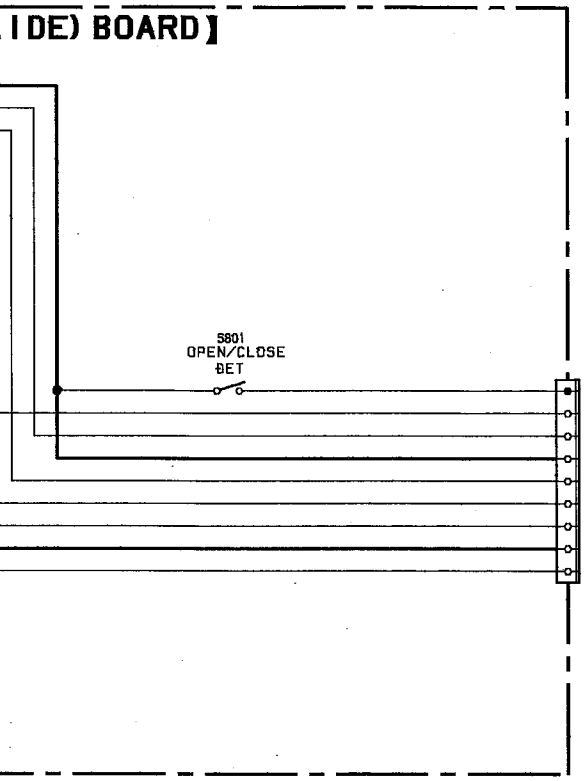
IC701 M54641L



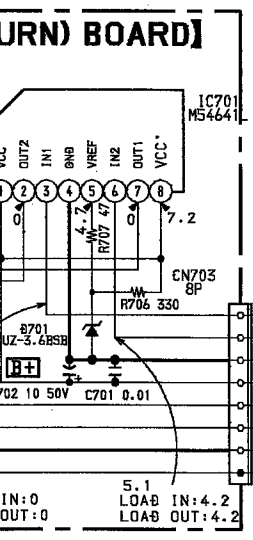
IC801 BA6286N



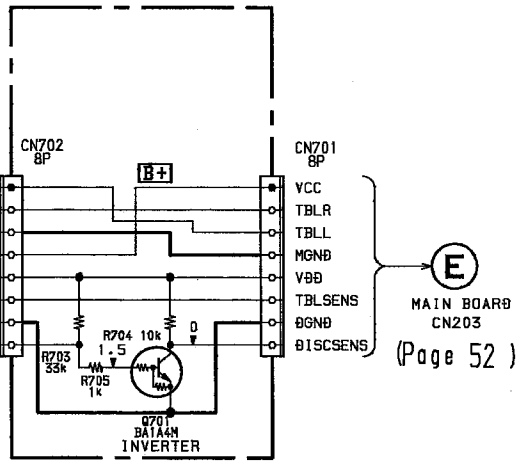
I DE) BOARD]



URN) BOARD]



[CONNECTOR BOARD]

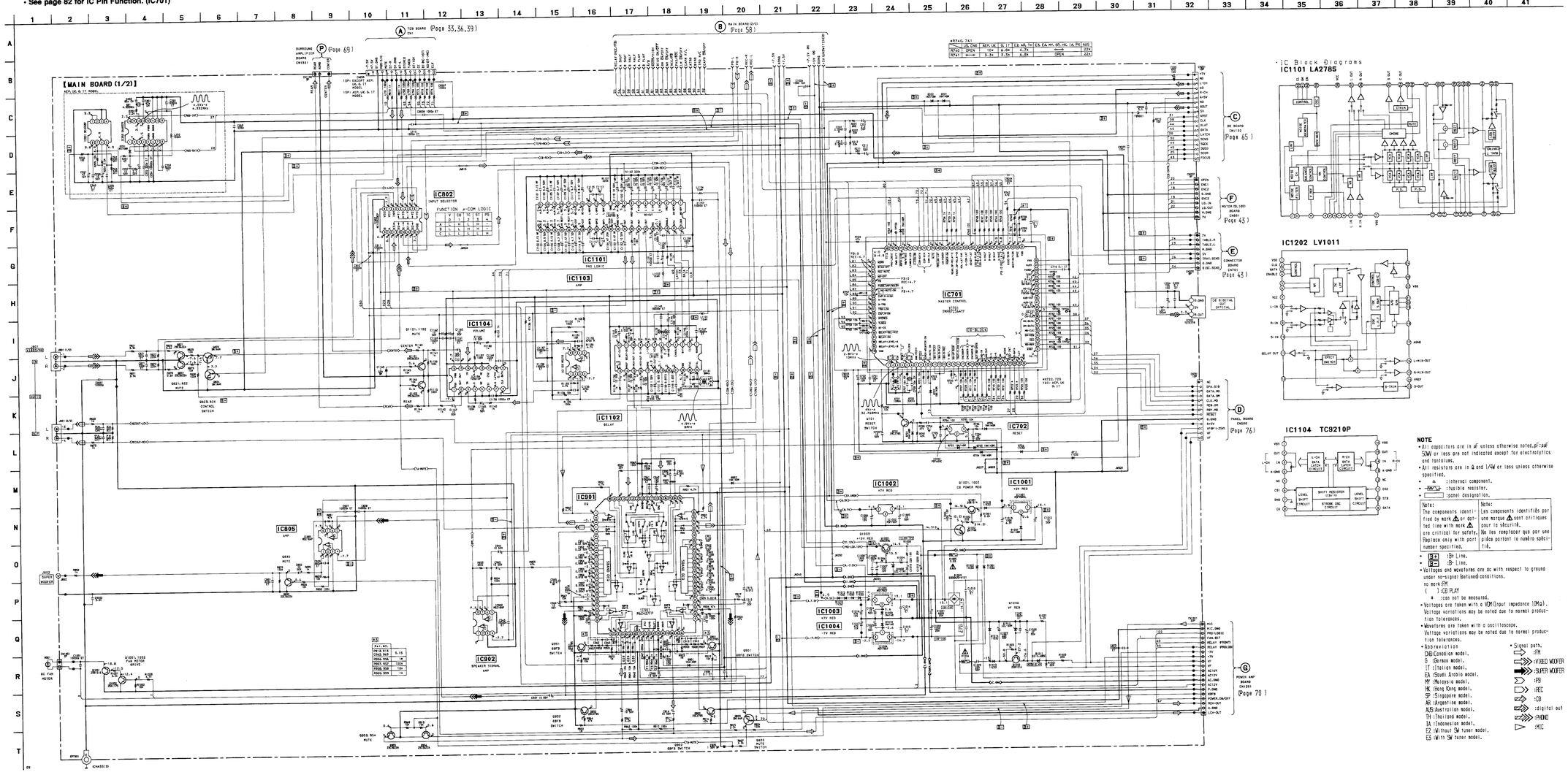


NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- B+ :B+ Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.

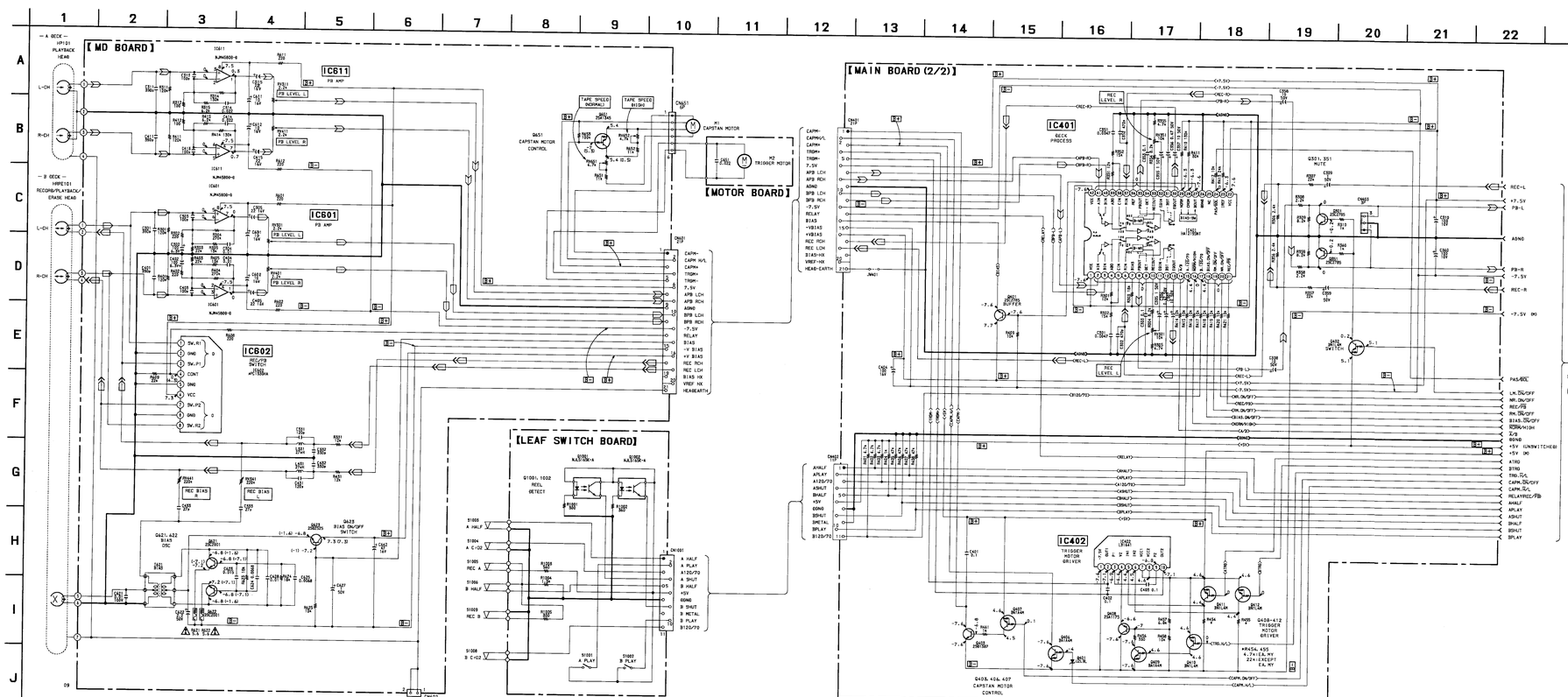
6-13. SCHEMATIC DIAGRAM — MAIN SECTION —

• See page 82 for IC Pin Function. (IC701)



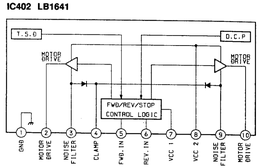
6-14. SCHEMATIC DIAGRAM — DECK SECTION —

• See page 47 for Printed Wiring Board. (MAIN BOARD)

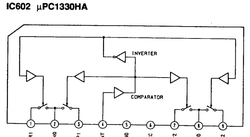


• IC Block Diagrams

IC402 LB1641



IC602 μPC1330HA



NOTE

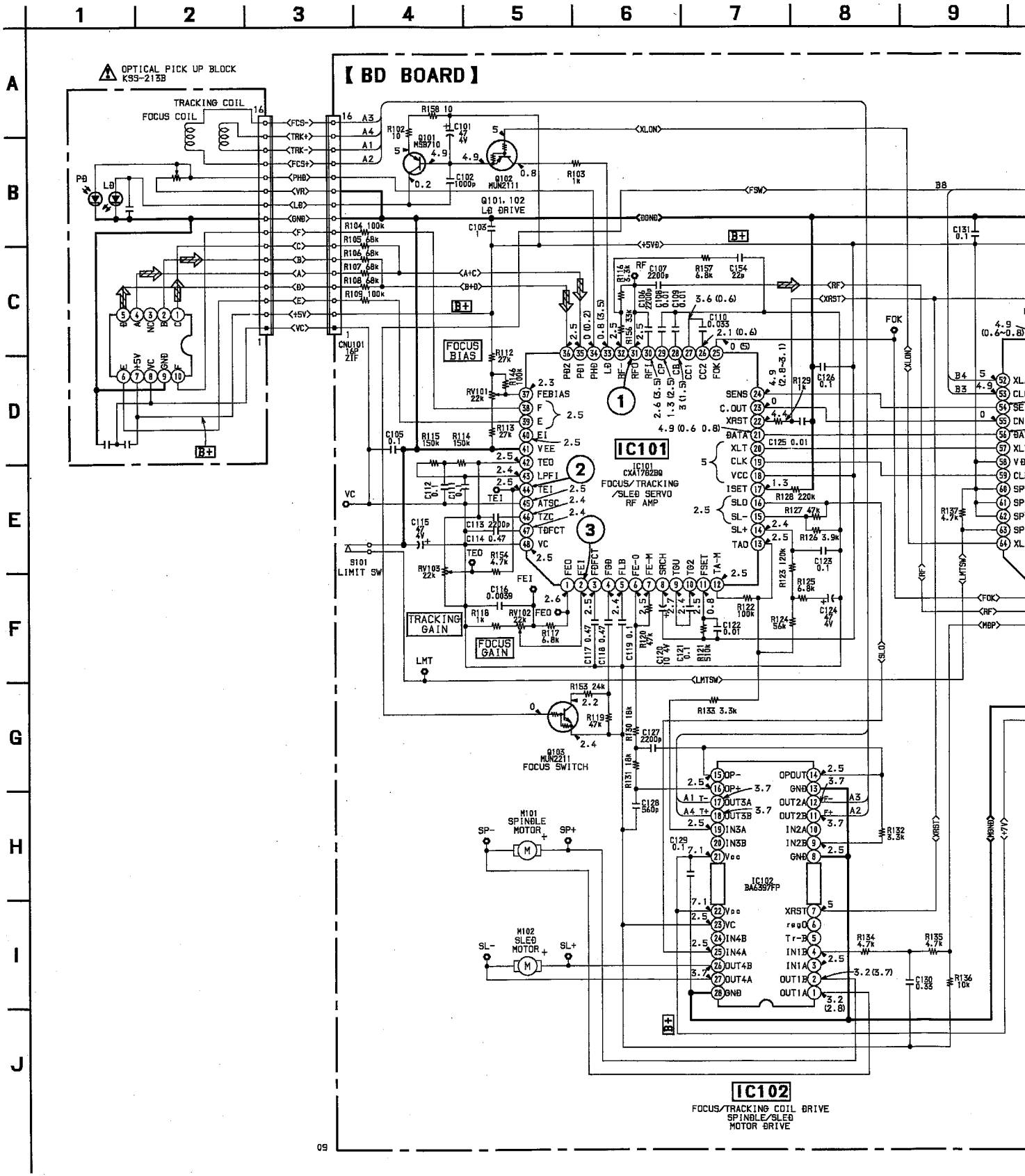
- All capacitors are in μF unless otherwise noted. pF: μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ⚠ : fusible resistor.

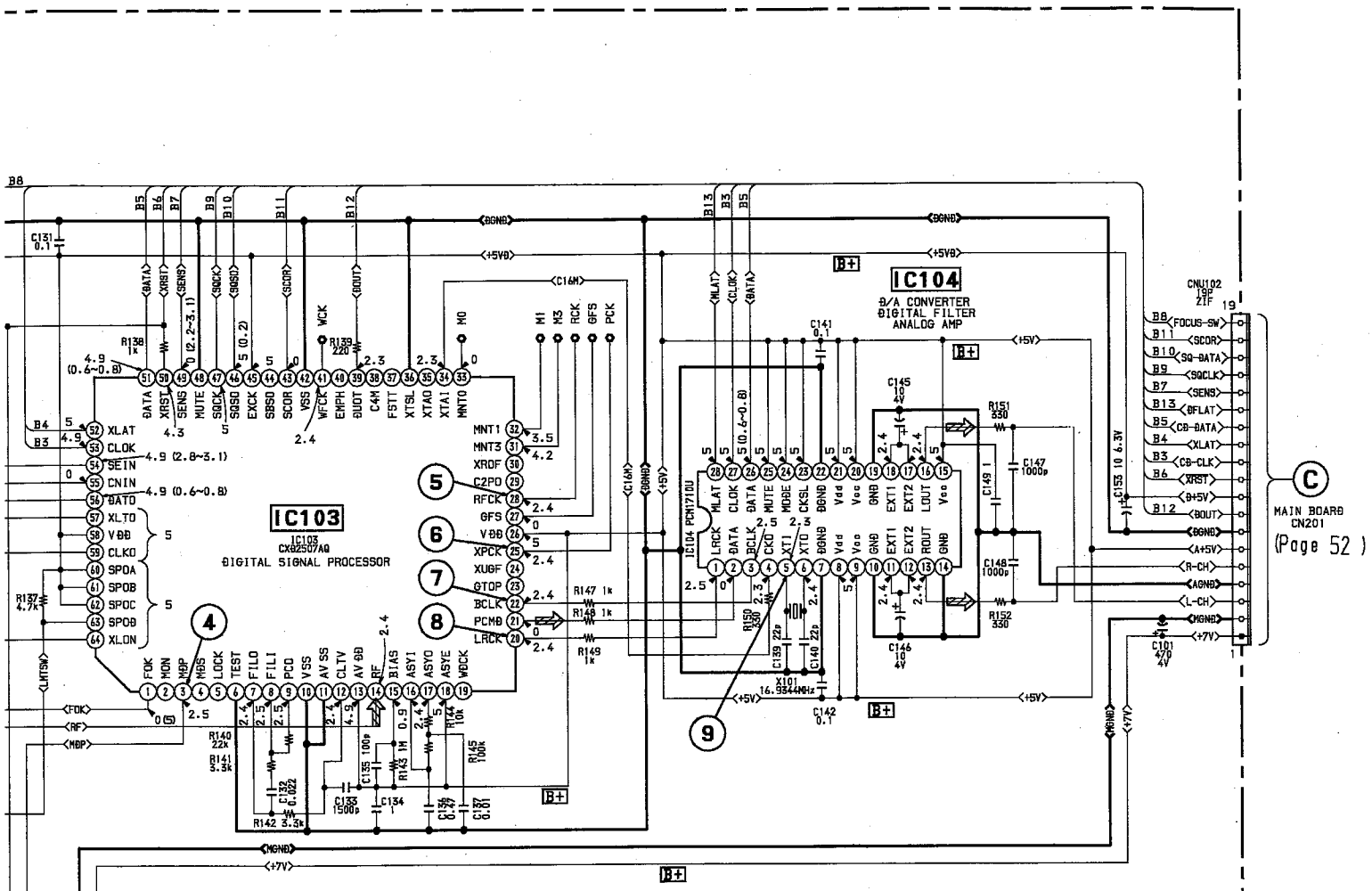
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- B+ : B+ Line.
- B− : B− Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: PLAY
  ( ): REC
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Abbreviation
  EA :Saudi Arabia model.
  MY :Malaysia model.
- Signal path.
  ⟩⟩ : PB (DECK A)
  ⟩⟩ : PB (DECK B)
  ⟩⟩ : REC (DECK B)

6-17. SCHEMATIC DIAGRAM — CD SECTION —

• See page 85 for IC Block Diagrams.





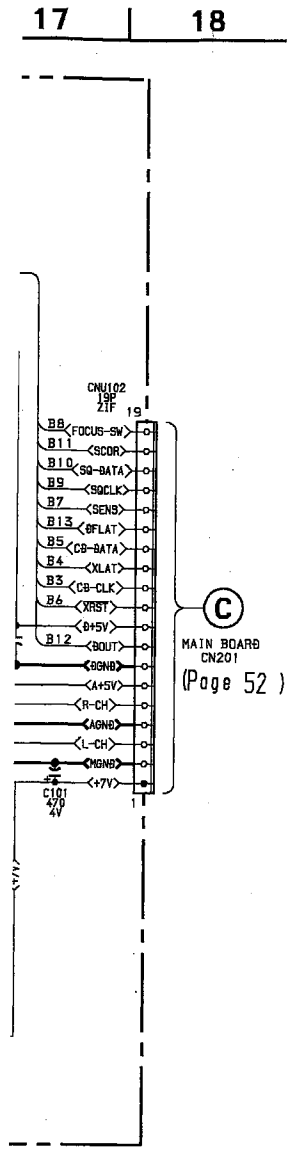
NOTE

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

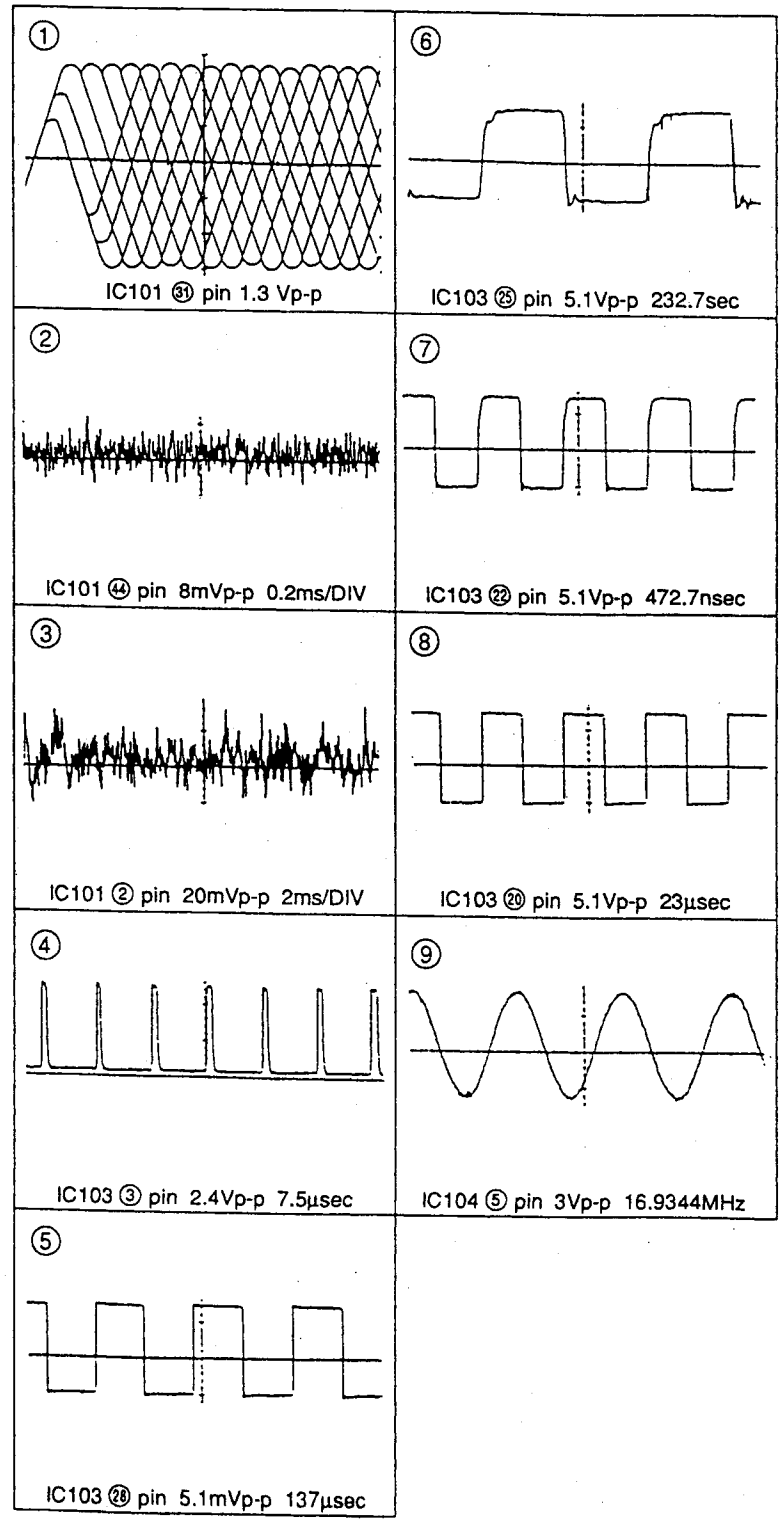
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- Signal path.
  ⇨ :CD

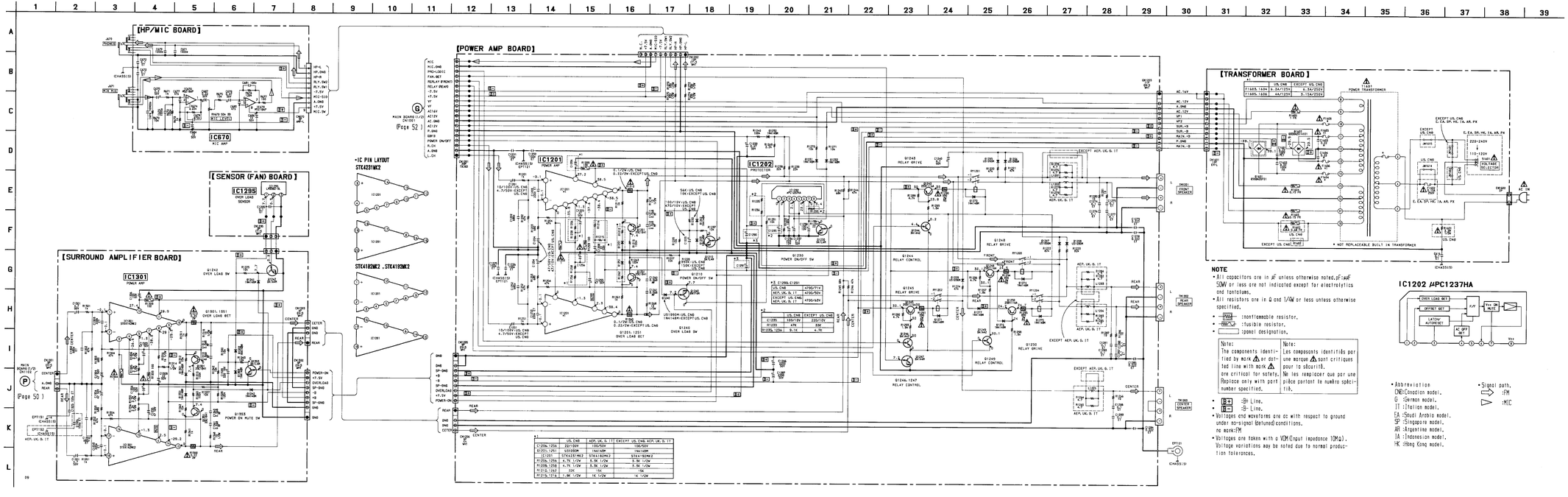
- B+ :B+ Line.
- ▭ :adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark: STOP
  ( ): PLAY
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.


17
18
CNU102
19P
ZIF
19
B8 FOCUS-SW
B11 SCOR
B10 SQ-DATA
B9 SQCLK
B7 SENS
B13 GFLAT
B5 CB-DATA
B4 XLAT
B3 CB-CLK
B6 XRST
B+5V
B12 BOUT
DGNDB
A+5V
R-CH
AGNDB
L-CH
MGNDB
+7V
C101
470
4V
C
MAIN BOARD
CN201
(Page 52)
:t to ground
lance 10MΩ).
rmal produc-
rmal produc-

• **Waveforms**

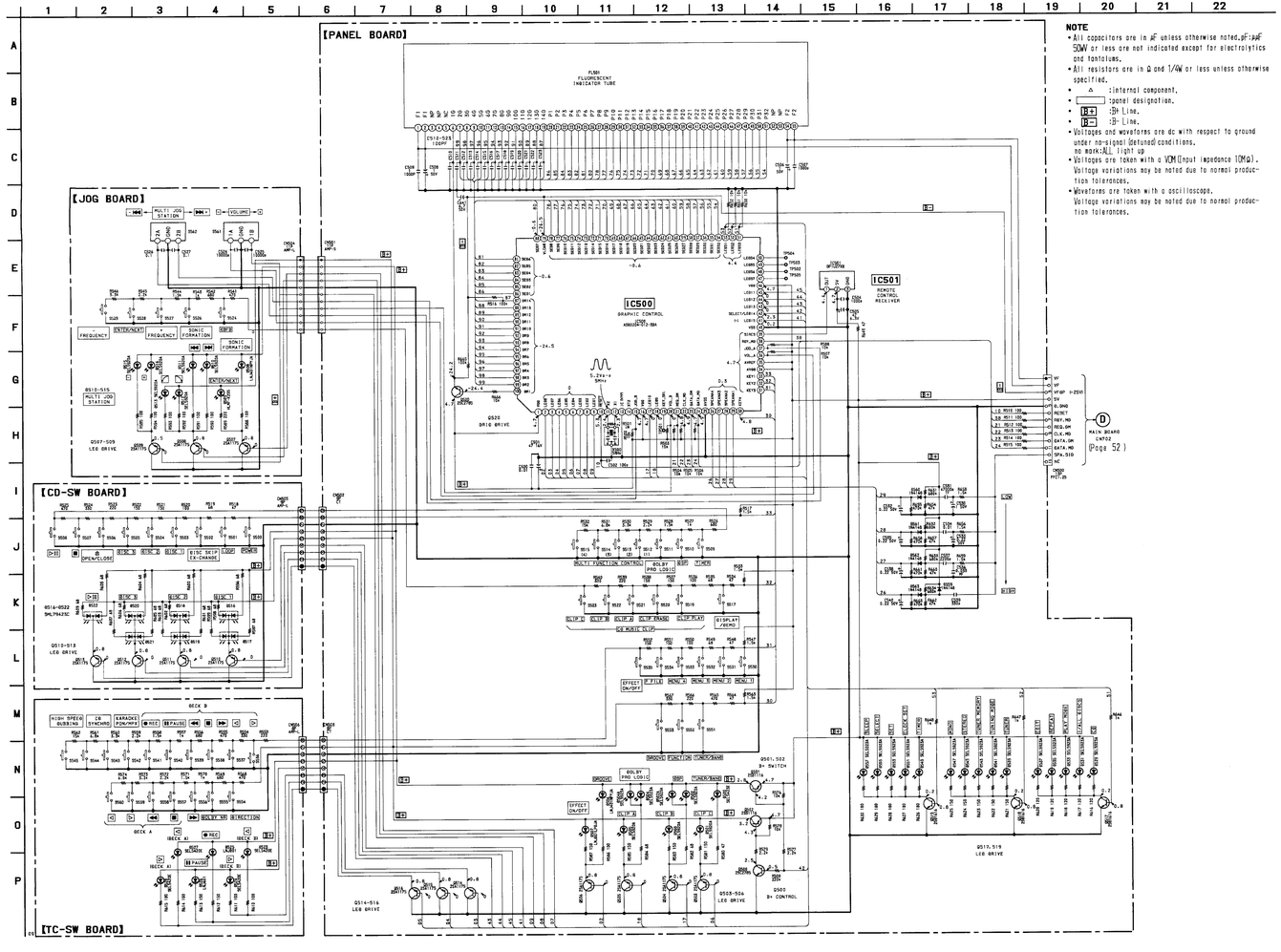

①
IC101 ㉛ pin 1.3 Vp-p
⑥
IC103 ㉕ pin 5.1Vp-p 232.7sec
②
IC101 ㊹ pin 8mVp-p 0.2ms/DIV
⑦
IC103 ㉒ pin 5.1Vp-p 472.7nsec
③
IC101 ② pin 20mVp-p 2ms/DIV
⑧
IC103 ⑳ pin 5.1Vp-p 23µsec
④
IC103 ③ pin 2.4Vp-p 7.5µsec
⑨
IC104 ⑤ pin 3Vp-p 16.9344MHz
⑤
IC103 ㉘ pin 5.1mVp-p 137µsec

6-19. SCHEMATIC DIAGRAM — POWER SECTION —



6-20. SCHEMATIC DIAGRAM — PANEL SECTION —

• See page 81 for IC Pin Function. (IC500)



NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- □ : panel designation.
- B+ : B+ Line.
- B- : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions. no mark: ALL light up
- Voltages are taken with a VOM (Input impedance 10MΩ). 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.