HCD-H100

SERVICE MANUAL

US Model
Canadian Model

HCD-H100 is the tuner, deck, CD, amplifier section in MHC-G100.

CD SECTION	Model Name Using Similar Mechanism		NEW
	Base Unit Type		CD94V5CP
TAPE SECTION	Model Name Using Similar Mechanism		NEW
	Tape Transport Mechanism Type	DECK–A	ZY-318-FW-K-130-3
		DECK–B	ZY-318-FW-K-130-3

SPECIFICATIONS

For the U.S. model
AUDIO POWER SPECIFICATIONS
POWER OUTPUT AND TOTAL HARMONIC DISTORTION:
With 8 ohms loads, both channels driven, from 70-20,000 Hz; rated 4 watts per channel minimum RMS power, with no more than 0.9 % total harmonic distortion from 250 milliwatts to rated output.

CD player section

System: Compact disc digital audio system
Laser: Semiconductor laser
Laser output: Max. 44.6 uW*
*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.
Wavelength: 780 – 790 nm
Frequency response: 2 Hz – 20 kHz (±0.5 dB)

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: 530 – 1,710 kHz (with the tuning interval set at 10 kHz)
Intermediate frequency: 450 kHz

Amplifier section

Continuous RMS power output: 5 W + 5 W (8 ohms at 1 kHz, 10 % THD)
Outputs
PHONES (stereo phone jack): accepts headphones of 8 ohms or more.
SPEAKER: accepts impedance of 8 to 16 ohms.

— Continued on next page —

COMPACT DISC DECK RECEIVER

SONY®

SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured alcohol-moistened swab :
   record/playback heads — pinch rollers
   erase head — rubber belts
   capstan — idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
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 Mesurement

Torque	Torque meter	Meter reading
FWD	CQ-102C	40 — 70g • cm (0.56 – 0.97oz • inch)
FWD Back tension	CQ-102C	1 — 5g • cm (0.01 – 0.07oz • inch)
FF/REW	CQ-201B	55 — 140g • cm or more (0.76 — 1.94oz • inch)

SECTION 4
ELECTRICAL ADJUSTMENTS

DECK SECTION **0 dB=0.775V**

1. Demagnetize the record/playback head with a head damagnetizer. (Do not bring the head demagnetizer close to the erase head.)
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-ch.

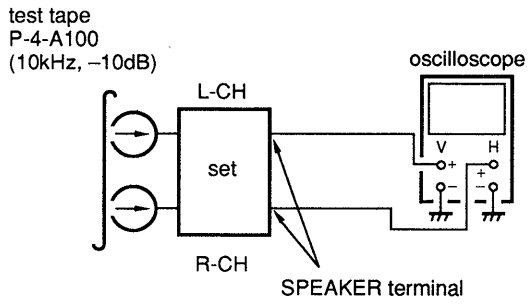
• Switches and controls should be set as follows unless otherwise specified.

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

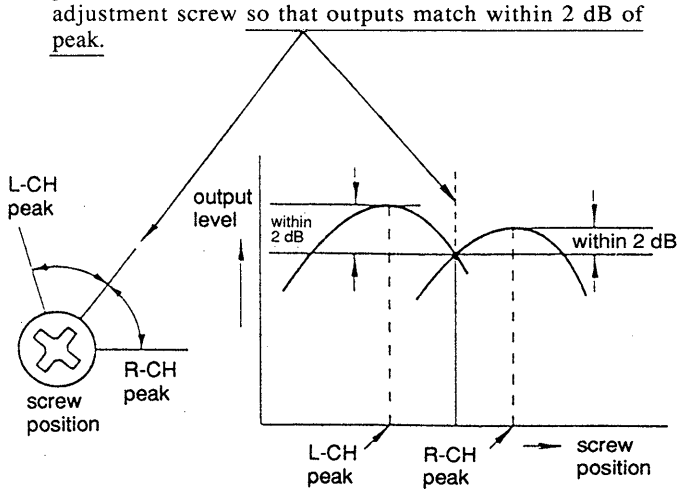
Record/Playback Head Azimuth Adjustment

DECK A **DECK B**

Note : Perform this adjustments for both decks.
Procedure :
1. Mode : Playback

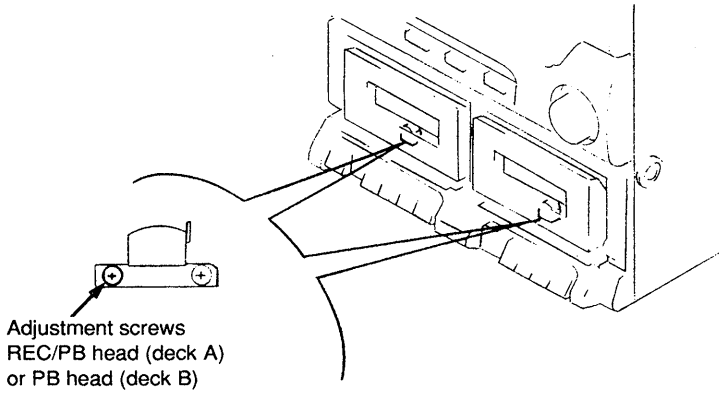


2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 2 dB of peak.



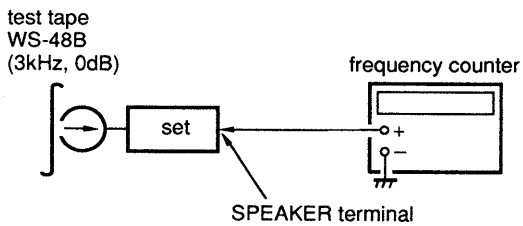
3. After the adjustments, apply suitable locking compound to the parts adjusted.

Adjustment Location :



Tape Speed Adjustment DECK A

Procedure :
Mode : Playback



Test tape

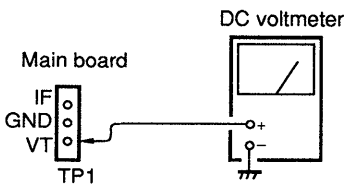
Type	Signal	Used for
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment

Adjust the SFR201 so that the frequency counter reads 3,000 Hz±30 Hz.

TUNER SECTION 0dB=1μV

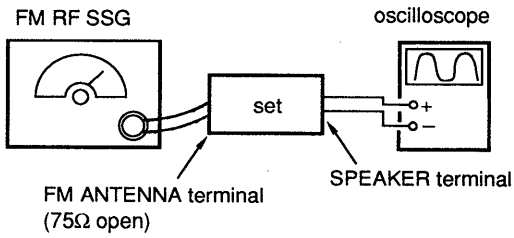
FM Section Adjustment

FM Tuning Voltage Adjustment



Procedure :
1. Set the reception frequency of the unit to 87.5 MHz.
2. Adjust L103 for 1.2±0.05V reading on the DC voltmeter.
3. Set the reception frequency of the unit to 108 MHz.
4. Confirm that the voltage reading on the DC voltmeter is within 7.8±0.5V.

FM Tracking Adjustment

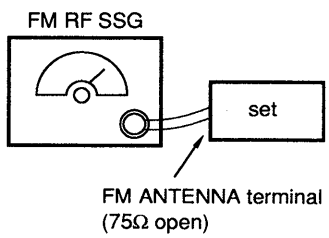


Carrier frequency : 90 MHz, 106 MHz
Modulation : AUDIO 1 kHz, 75 kHz deviation (100%)
Output level : 20 dB

Procedure:
1. Tune the set to 90 MHz.
2. Adjust L102 so that when the waveform on the oscilloscope is maximum, no noise appears.
3. Tune the set to 106 MHz.
4. Adjust TC101 so that when the waveform on the oscilloscope is maximum, no noise appears.

- Repeat the procedures in each adjustment several times, and the tracking adjustment should be finally done by the trimmer capacitors.

FM Tuned Level Adjustment

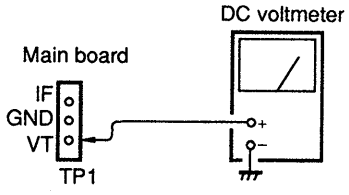


Carrier frequency : 98 MHz
Modulation : AUDIO 1 kHz, 75 kHz deviation (100%)
Output level : 28 dB

Procedure:
1. Tune the set to 98 MHz.
2. Adjust the moment which the TUNED display on the LCD takes to light up using SFR101.

AM Section Adjustment

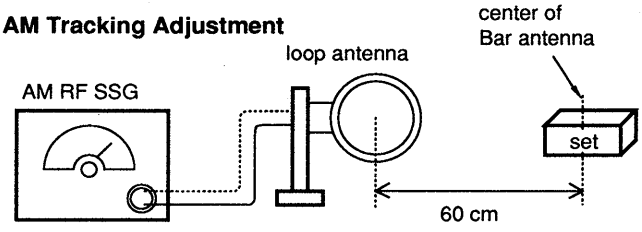
AM Tuning Voltage Adjustment



Procedure:

1. Set the reception frequency of the unit to 530 kHz.
2. Adjust L105 for 1.2±0.05V reading on the DC voltmeter.
3. Set the reception frequency of the unit to 1,710 kHz.
4. Confirm that the voltage reading on the DC voltmeter is within 8.0±0.5V.

AM Tracking Adjustment



30% amplitude modulation by 400 Hz signal

field strength dB (μ V/m)= RF SSG output level dB (μ V/m) –26 dB

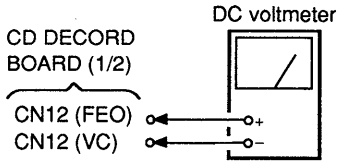
Procedure:

1. Tune the set to 600 kHz.
2. Set the output of AM RF SSG so that the input level of the set will become 60 dB (μV/m).
3. Adjust L104 so that when the waveform on the oscilloscope is maximum, no noise appears.
4. Tune the set to 1,400 Hz.
5. Adjust TC102 so that when the waveform on the oscilloscope is maximum, no noise appears.

- Repeat the procedures in each adjustment several times, and the tracking adjustment should be finally done by the trimmer capacitors.

CD SECTION

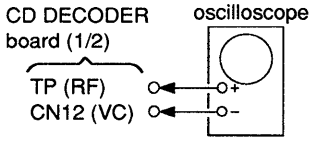
Focus Bias Adjustment



Procedure:

1. Connect DC voltmeter to test point CN12 (FEO), (VC).
2. Tune Power switch on.
3. Put disc (YEDS-18) is and playback.
4. Adjust VR01 so that the DC voltmeter reading is 0±0.1V.

RF Level Check

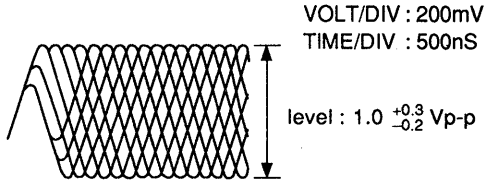


Procedure :

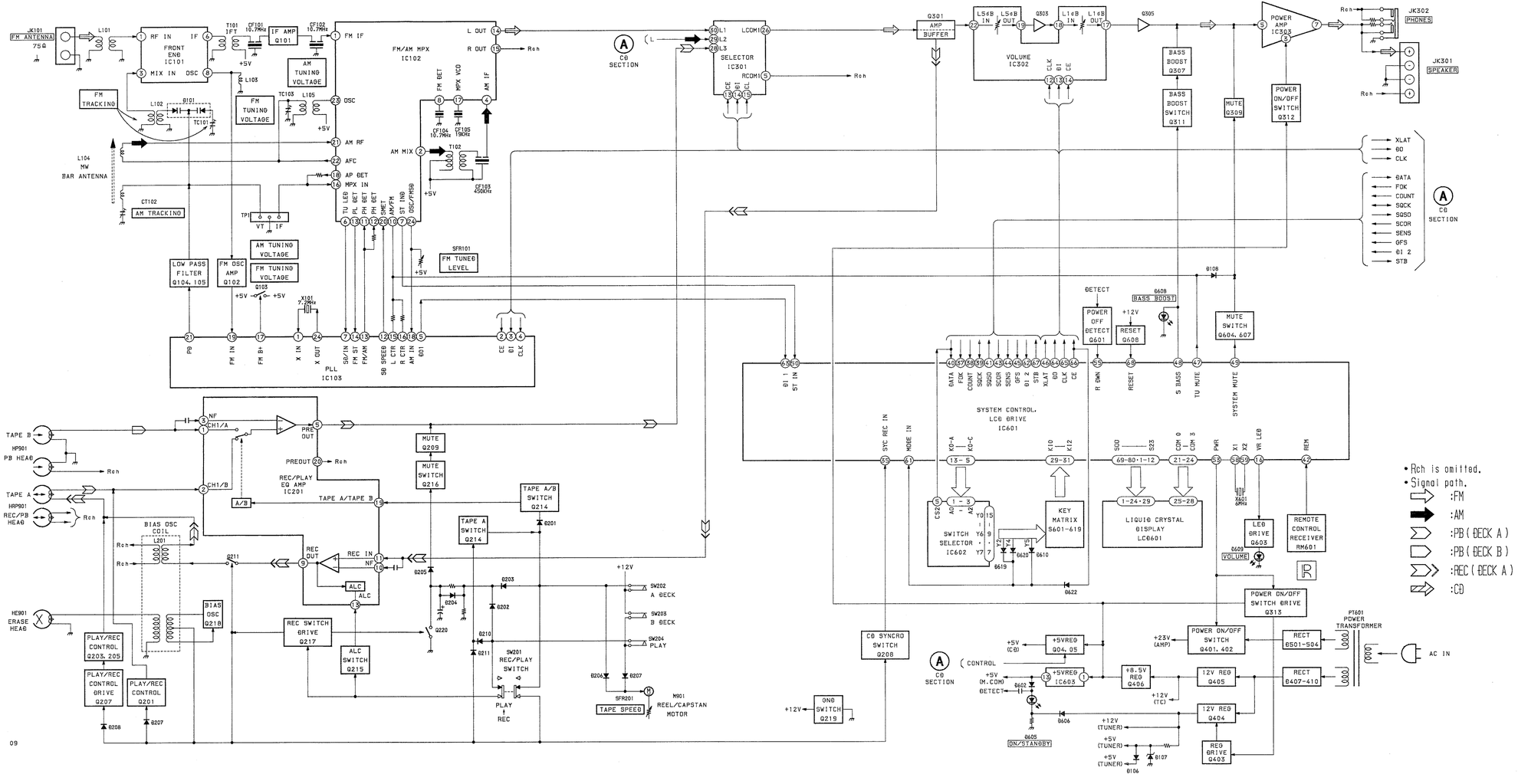
1. Connect oscilloscope to test point TP (RF) on CD DECODER board (1/2).
2. Turned Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note :

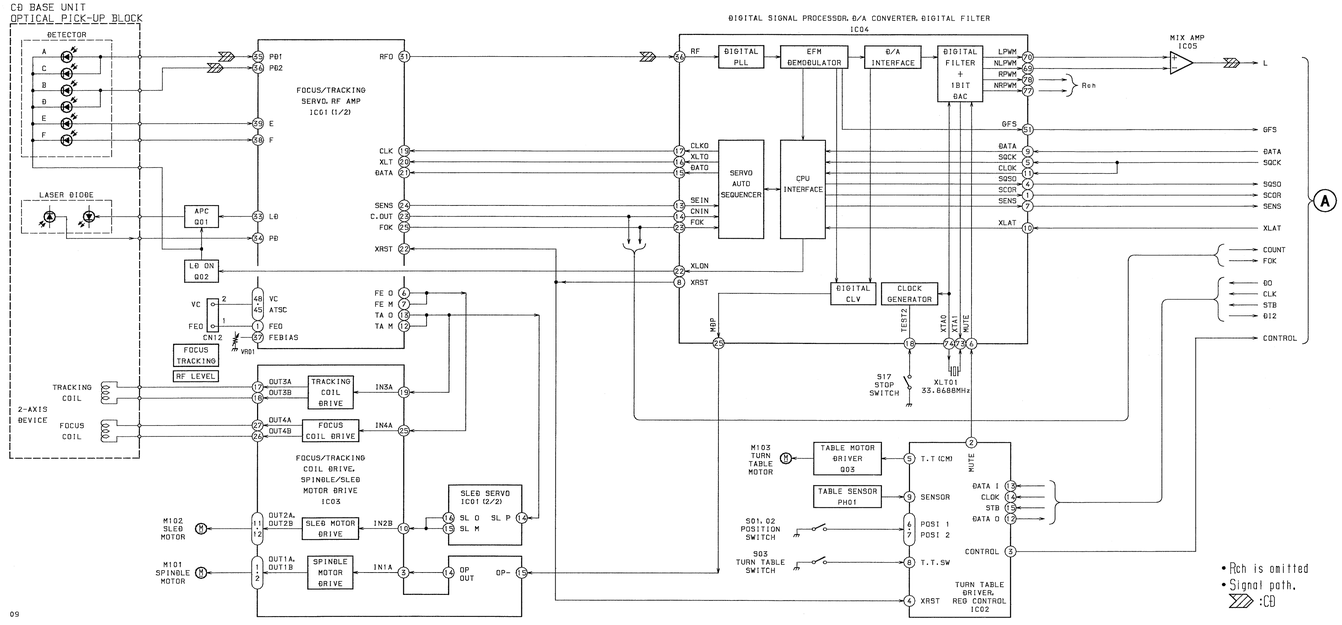
Clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



5-2. BLOCK DIAGRAMS
— MAIN SECTION —



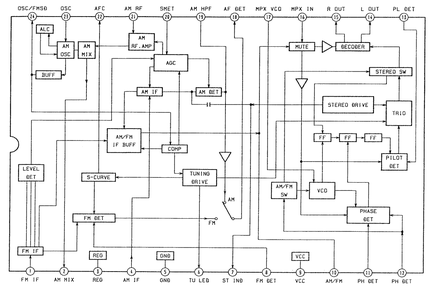
— CD SECTION —



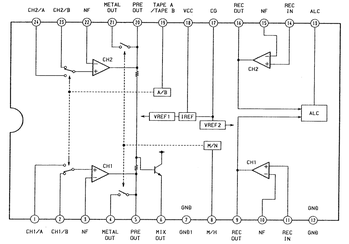
09

5-3. IC BLOCK DIAGRAMS — MAIN SECTION —

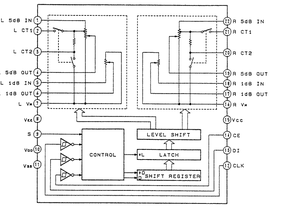
IC102 LA1831



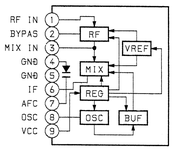
IC201 TA8189N



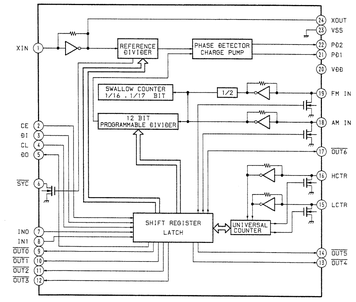
IC302 LC7535



IC101 LA1186

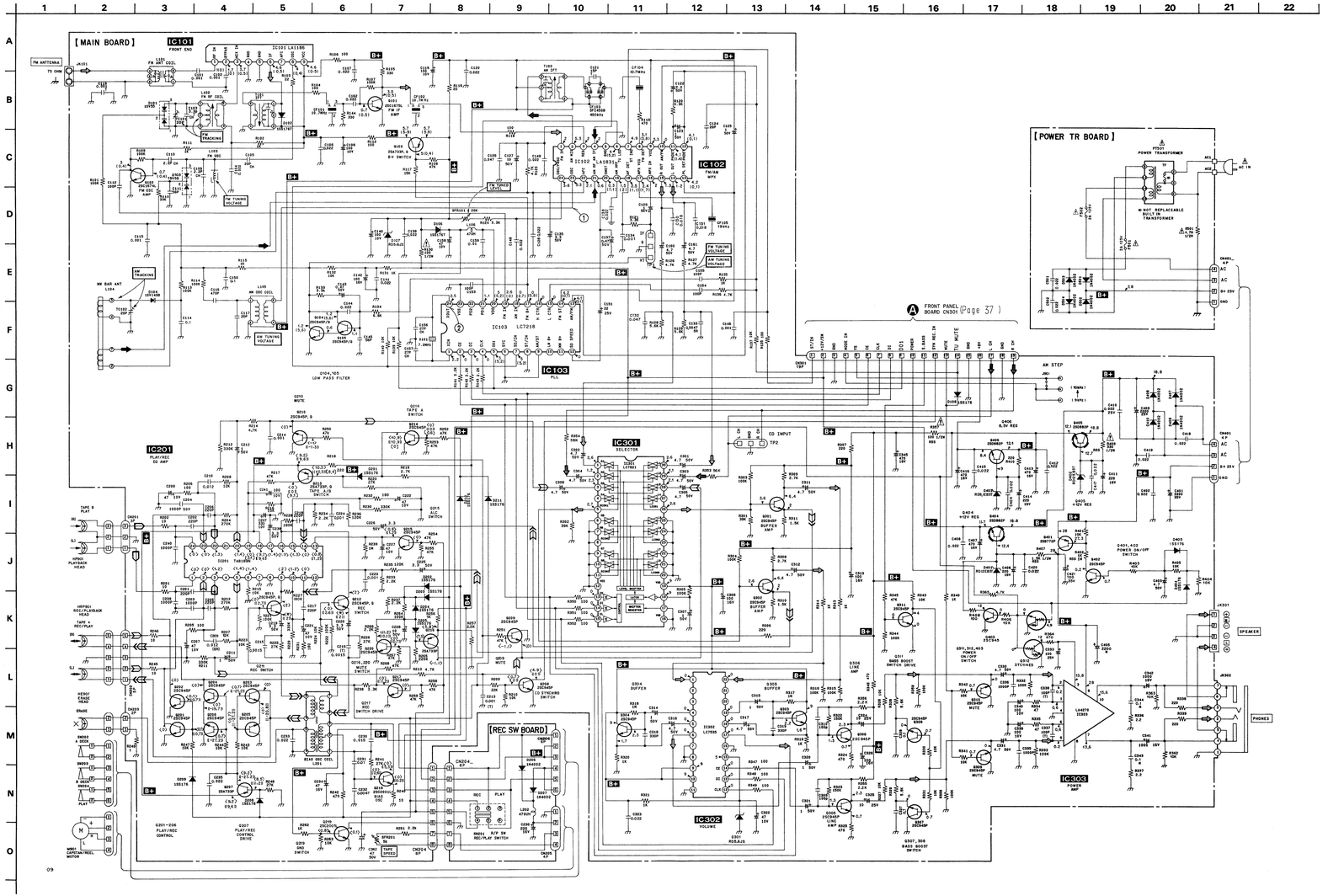


IC103 LC7218

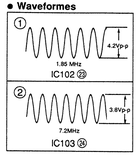


5-5. SCHEMATIC DIAGRAM — MAIN SECTION —

• See page 18 for IC Block Diagrams.



• Waveformes



Note:

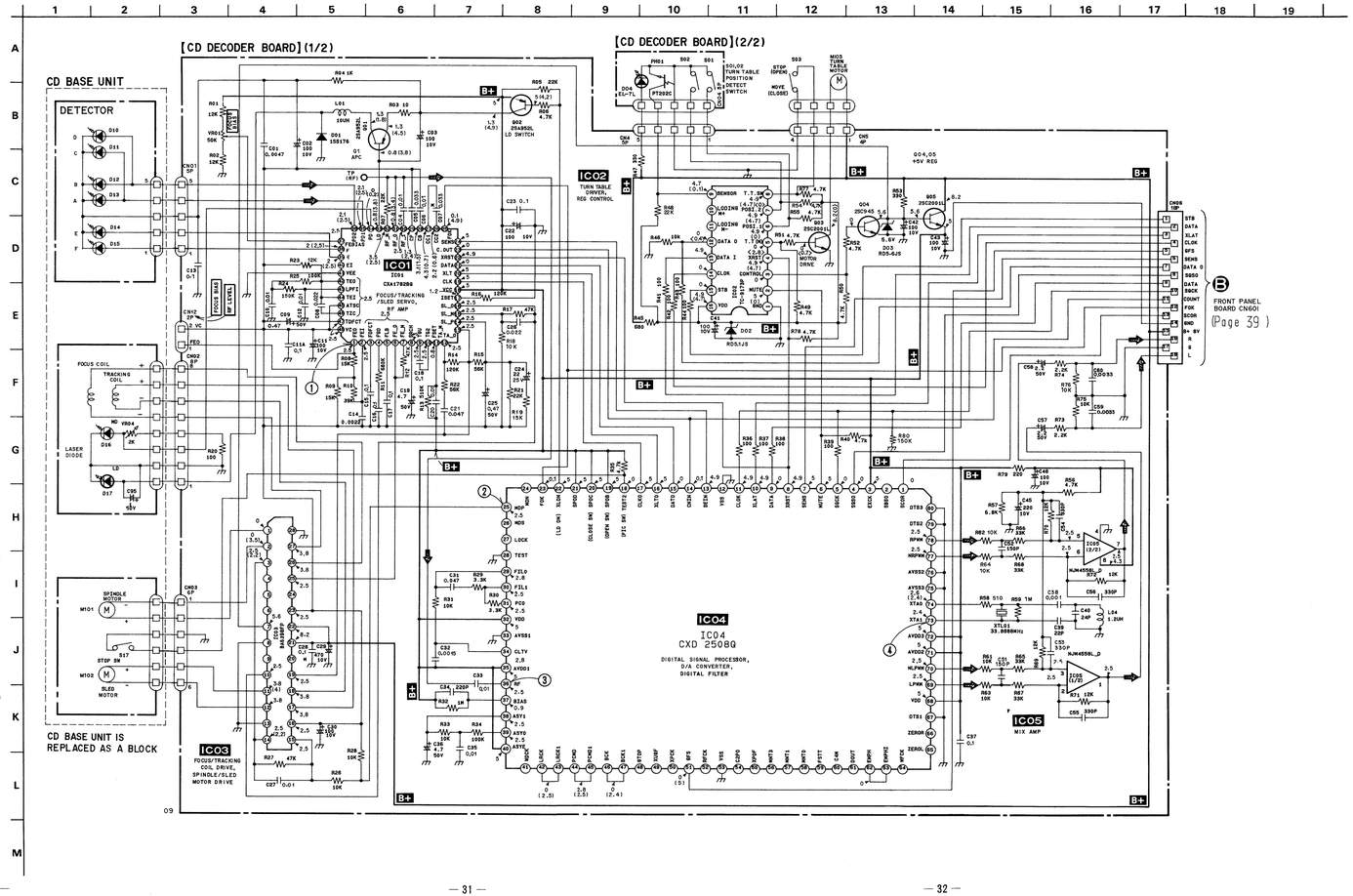
- All capacitors are in µF unless otherwise noted. pF:µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

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.

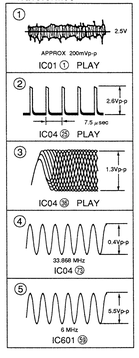
- B+ : B+ Line
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (deturned) conditions.
  no mark : FM
  ( ) : AM
  < > : PLAY (DECK A)
  ( ) : PLAY (DECK B)
  (( )) : REC (DECK A)
  ✱ : can not be measured.
- Voltages are taken with a VOM (Input impedance 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.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM
  ⇨ : PB (DECK A)
  ⇨ : PB (DECK B)
  ⇨ : REC (DECK A)
  ⇨ : CD

5-6. SCHEMATIC DIAGRAM — CD DECODER SECTION —

• See page 40 for IC Block Diagrams.



● Waveformes



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
- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : STOP
  ( ) : PLAY
  < > : DISC SKIP
- 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.
- Signal path.
  ⇨ : CD

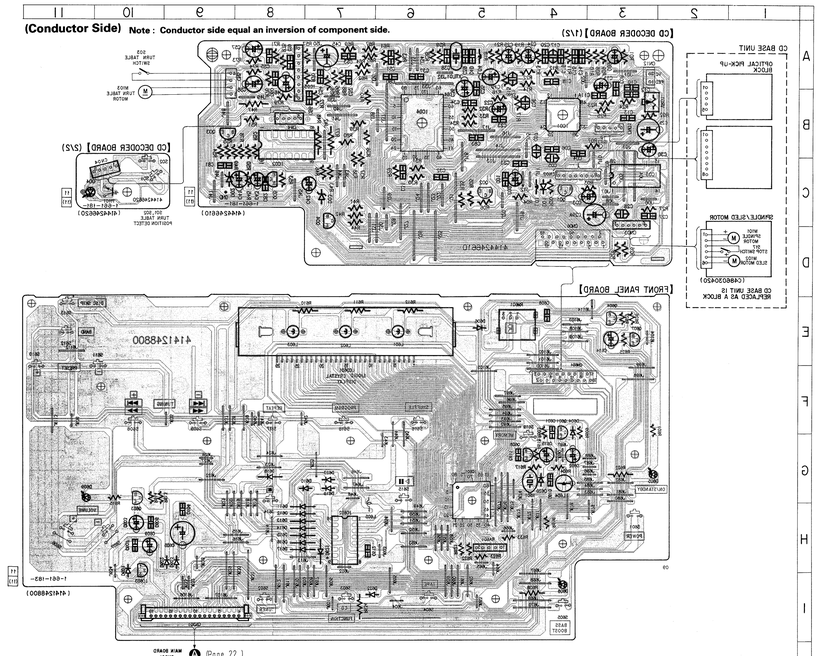
Note:

- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.

5-7. PRINTED WIRING BOARD — CD DECODER, FRONT PANEL SECTION —

• See page 11 for Circuit Boards Location.

(Conductor Side) **Note : Conductor side equal an inversion of component side.**



(Component Side)

CD BASE UNIT

OPTICAL PICK-UP BLOCK

SPINDLE/SLED MOTOR

M101 SPINDLE MOTOR
S101 STOP SWITCH
M102 SLED MOTOR

(4486304420)

CD BASE UNIT IS REPLACED AS A BLOCK

【CD DECODER BOARD】(1/2)

S03 TURN TABLE SWITCH

M103 TURN TABLE MOTOR

(4414246610)

【CD DECODER BOARD】(2/2)

S01, S02 TURN TABLE POSITION DETECT

(4414246620)

【FRONT PANEL BOARD】

(4141248800)

A MAIN BOARD CN301 (Page 22)

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• **Semiconductor Location**

Ref. No.	Location
D01	C-4
D02	C-9
D03	C-11
D04	C-11
D601	H-10
D602	H-9
D603	H-9
D604	F-4
D605	G-3
D606	E-5
D608	I-4
D609	G-11
D610	G-7
D611	H-8
D612	H-8
D613	H-8
D614	H-8
D615	H-8
D616	H-8
D617	H-8
D618	G-8
D619	G-7
D620	G-4
D621	H-7
D622	I-6
IC01	B-4
IC02	B-8
IC03	C-3
IC04	B-6
IC05	A-8
IC601	G-5
IC602	H-7
IC603	I-10
Q01	C-4
Q02	C-5
Q03	B-9
Q04	C-7
Q05	C-8
Q601	F-4
Q603	H-10
Q604	E-7
Q607	E-7
Q608	G-4

Note:
- ○—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- △ : internal component.

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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
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- 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.
- Signal path.
  ⇨ : CD

5-8. SCHEMATIC DIAGRAM — FRONT PANEL SECTION —

• See page 40 for IC Block Diagrams.
• See page 42 for IC Pin Function. (IC601)

【FRONT PANEL BOARD】

A MAIN BOARD CN301 (Page 27)

B CD DECODER BOARD(1/2) CN406 (Page 33)

IC601
IC601
UPD753016-H100
SYSTEM CONTROL, LCD DRIVE

IC602
SWITCH SELECTOR

IC603
+5V REC

LCD601
LIQUID CRYSTAL DISPLAY

12V/120MAX3

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