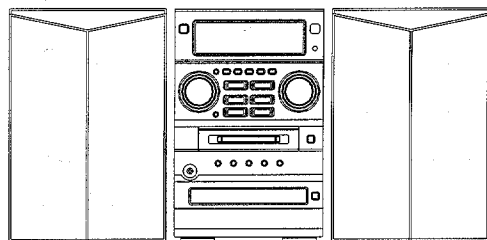


aiwa



XR-MD85



MD/CD STEREO SYSTEM

- BASIC TAPE MECHANISM: 2ZM-1 P6
- BASIC CD MECHANISM: 3ZG-3 E1
- BASIC MD MECHANISM: 7ZG-9 A

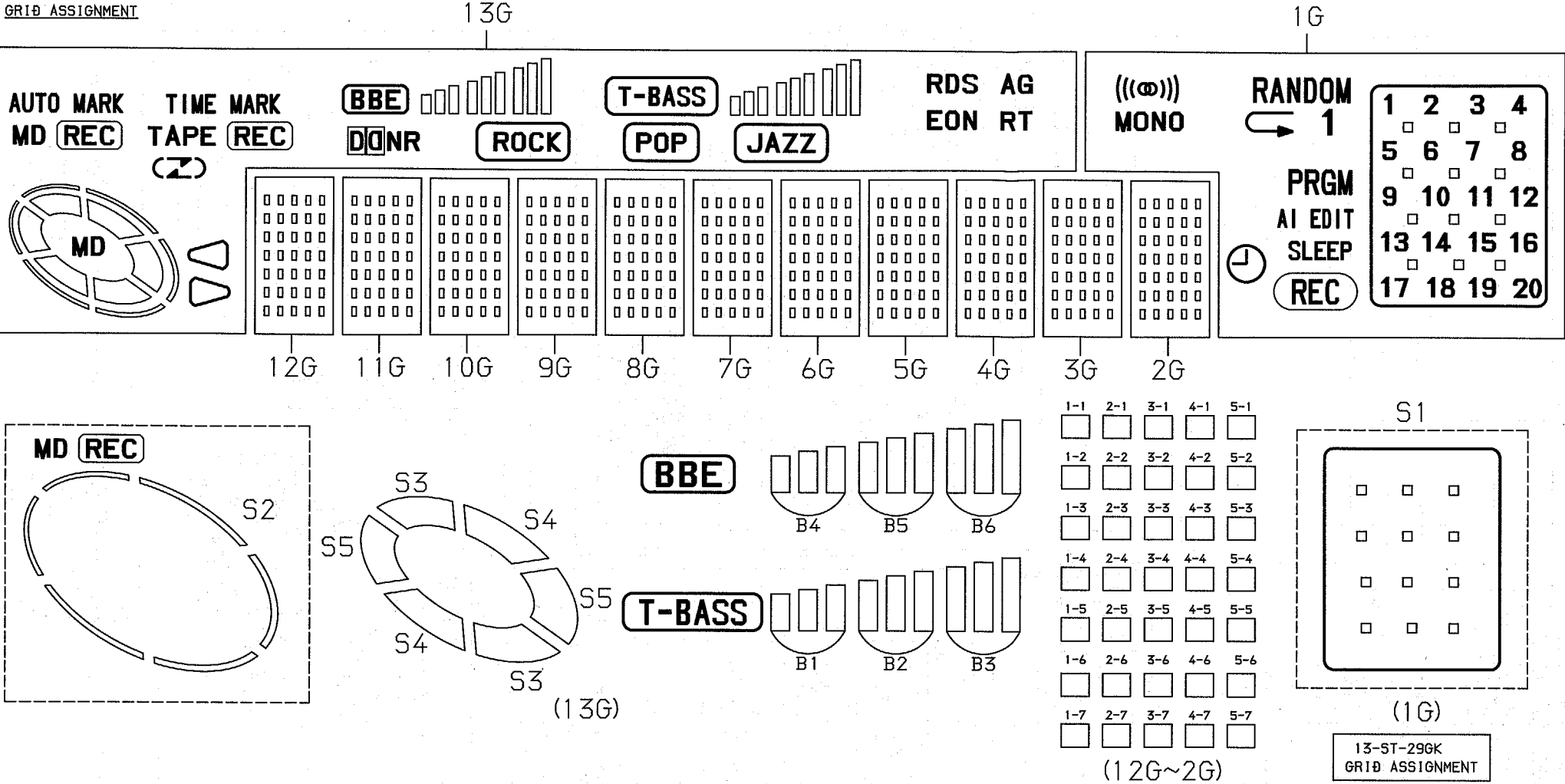
• TYPE: EZ,LH

REVISION PUBLISHING

This Service Manual is the "Revision Publishing" and replaces "Simple Manual" (S/M Code No. 09-986-283-60T).

FL (13-ST-29GK) GRID ASSIGNMENT/ANODE CONNECTION

GRID ASSIGNMENT



ANODE CONNECTION

	13G	12G~2G	1G		13G	12G~2G	1G
P1	JAZZ	1-1	1	P19	)	4-4	8
P2	POP	2-1	↶	P20	Z	5-4	9
P3	ROCK	3-1	MONO	P21	C	1-5	10
P4	DO NR	4-1	PANDOM	P22	TAPE REC	2-5	11
P5	RT	5-1	(∞)	P23	S2	3-5	12
P6	EON	1-2	PRGM	P24	S3	4-5	13
P7	AG	2-2	AI	P25	S4	5-5	14
P8	RDS	3-2	EDIT	P26	S5	1-6	15
P9	B1	4-2	SLEEP	P27	MD	2-6	16
P10	B2	5-2	⌚	P28	TIME MARK	3-6	17
P11	B3	1-3	REC	P29	AUTO MARK	4-6	18
P12	T-BASS	2-3	(カレンダ-)	P30	-	5-6	19
P13	B4	3-3	2	P31	-	1-7	20
P14	B5	4-3	3	P32	-	2-7	S1
P15	B6	5-3	4	P33	-	3-7	-
P16	BBE	1-4	5	P34	-	4-7	-
P17	▷	2-4	6	P35	-	5-7	-
P18	▷	3-4	7				

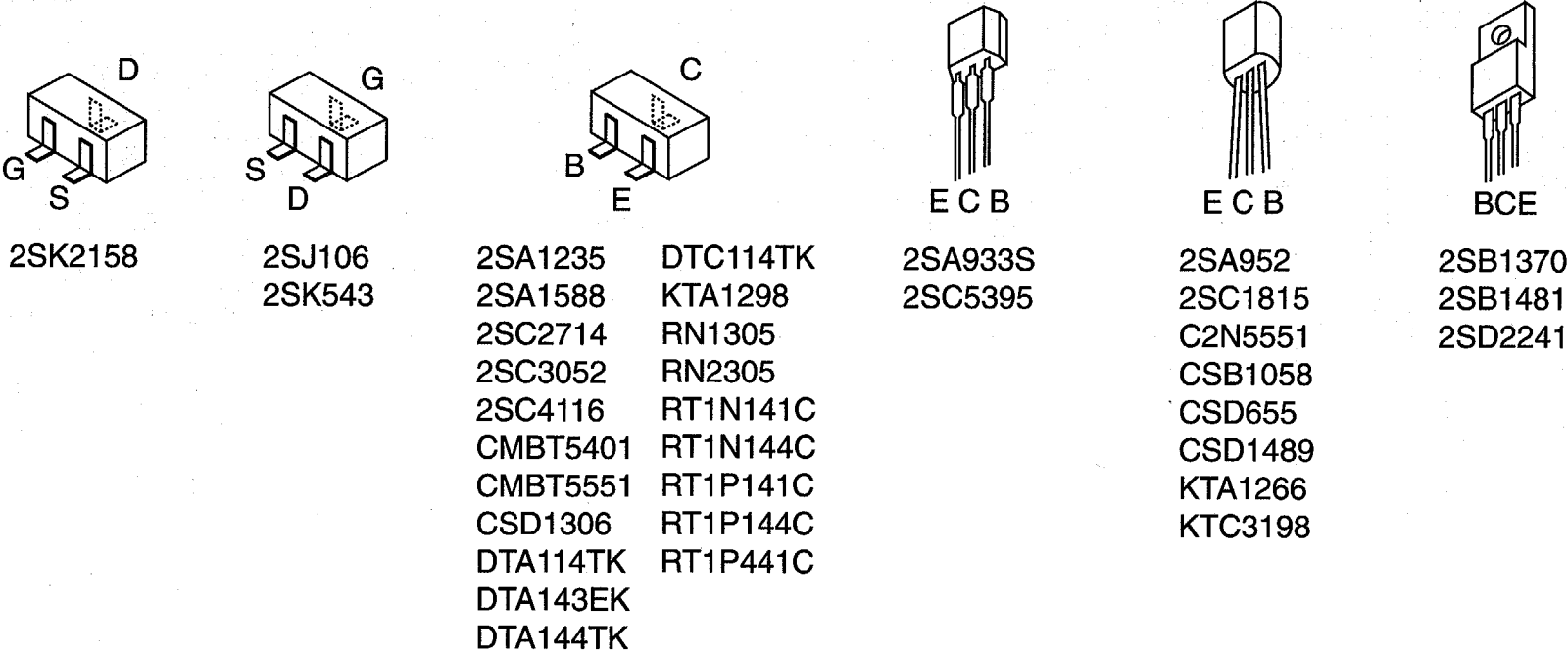
13-ST-29GK
ANODE CONNECTION

PIN CONNECTION

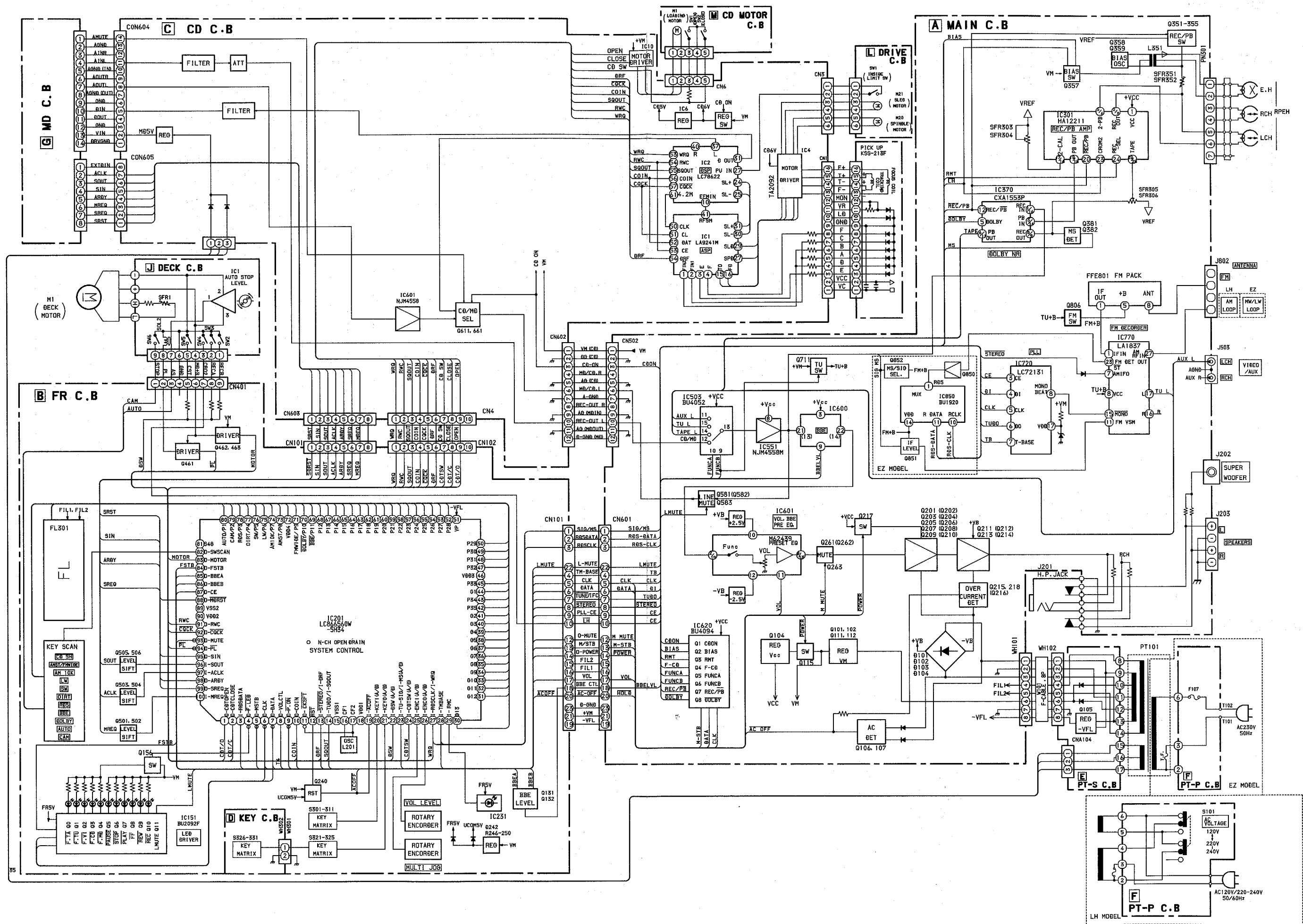
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
CONNECTION	F1	F1	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	NP	F2	F2

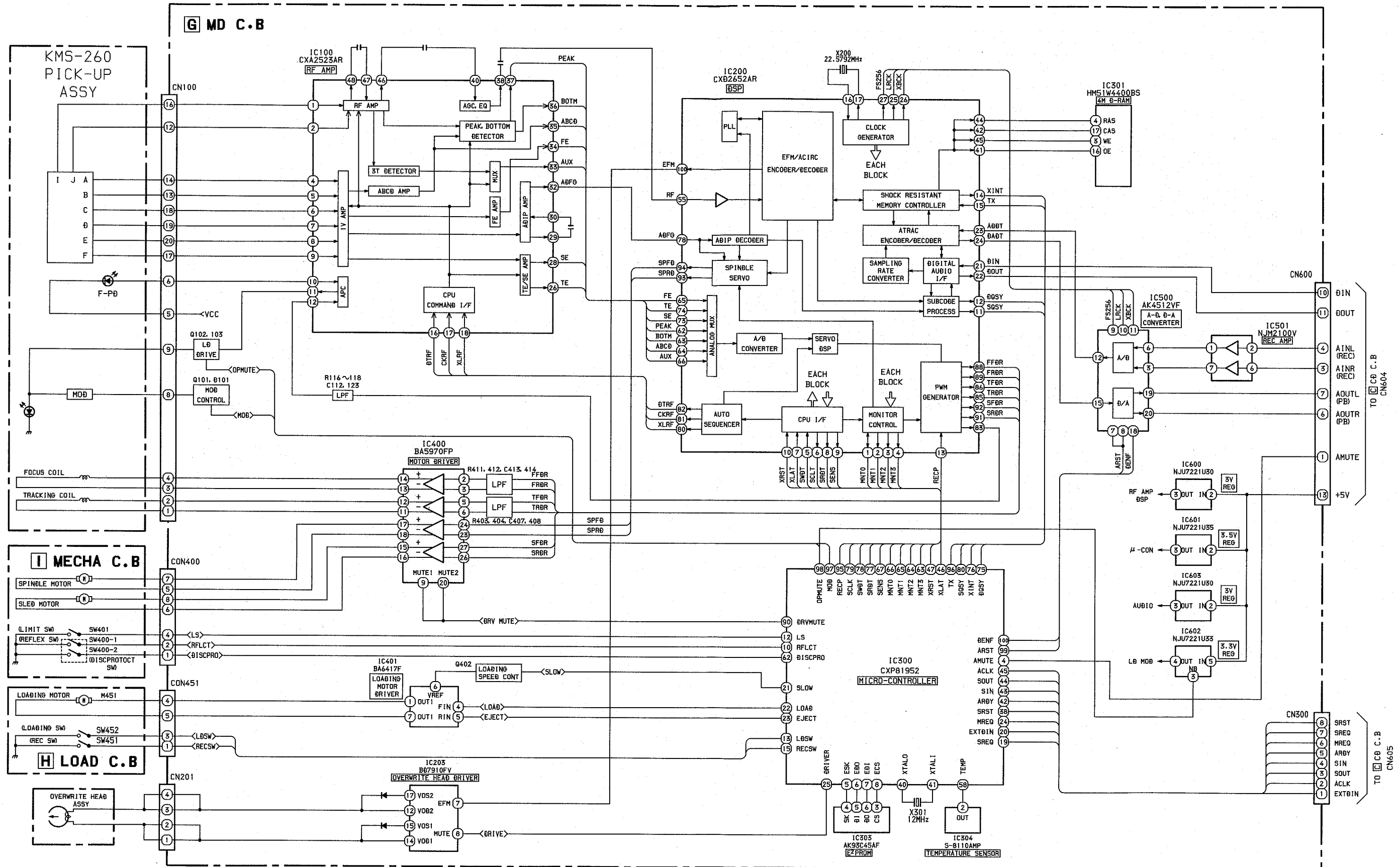
NOTE 1) F1, F2---Filament
2) NP-----No Pin
3) 1G~13G---Grid

TRANSISTOR ILLUSTRATION

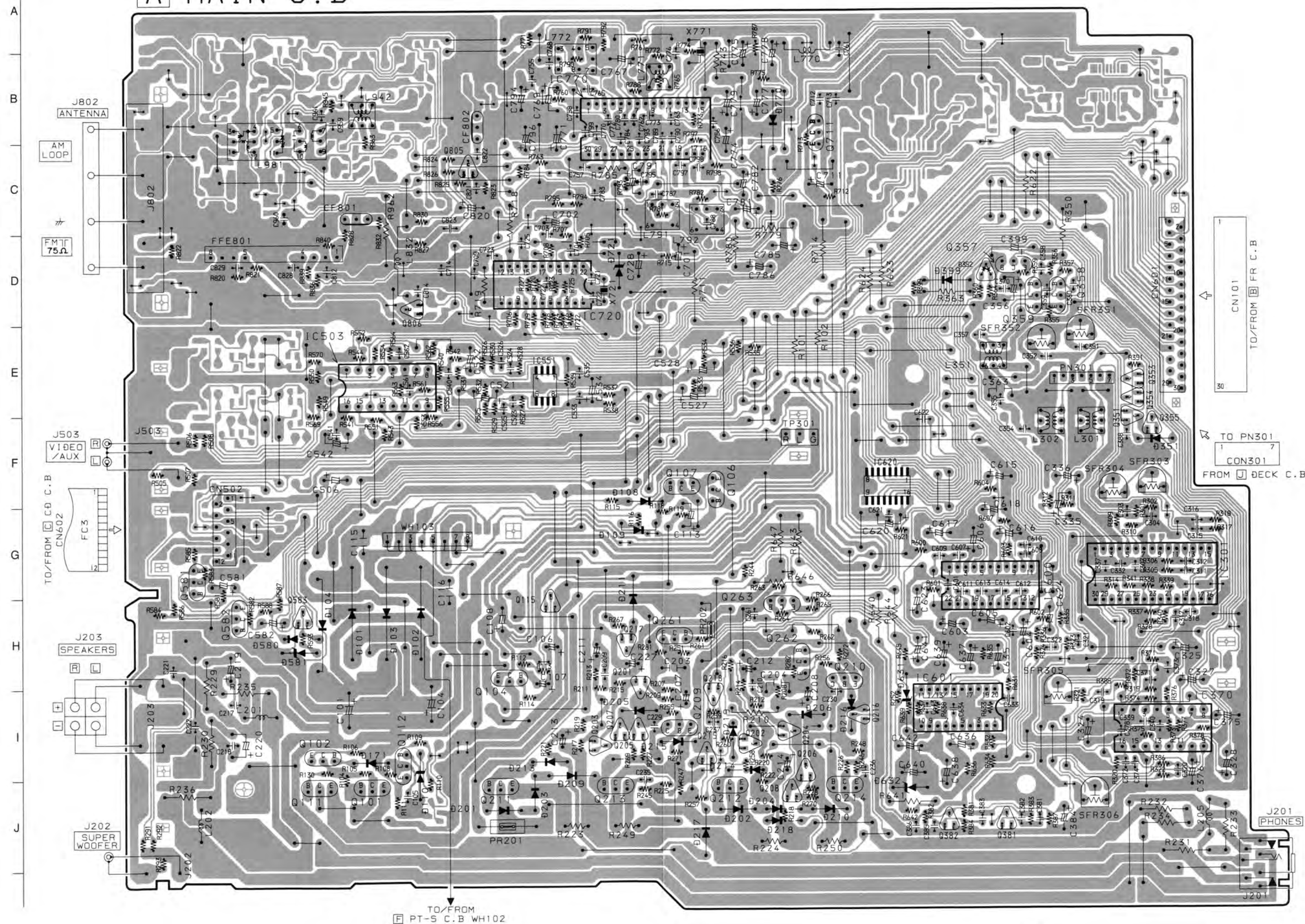


BLOCK DIAGRAM-1

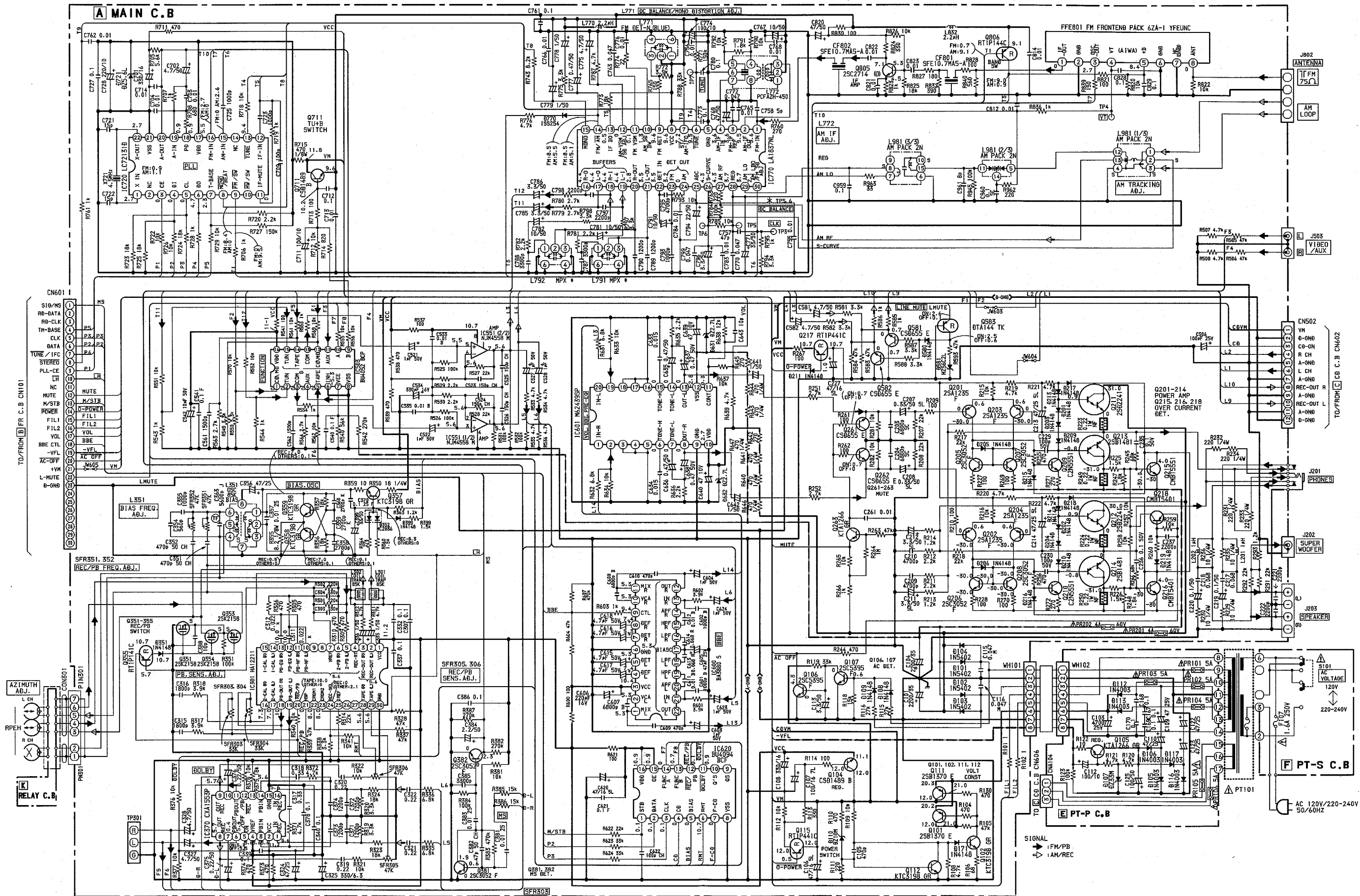




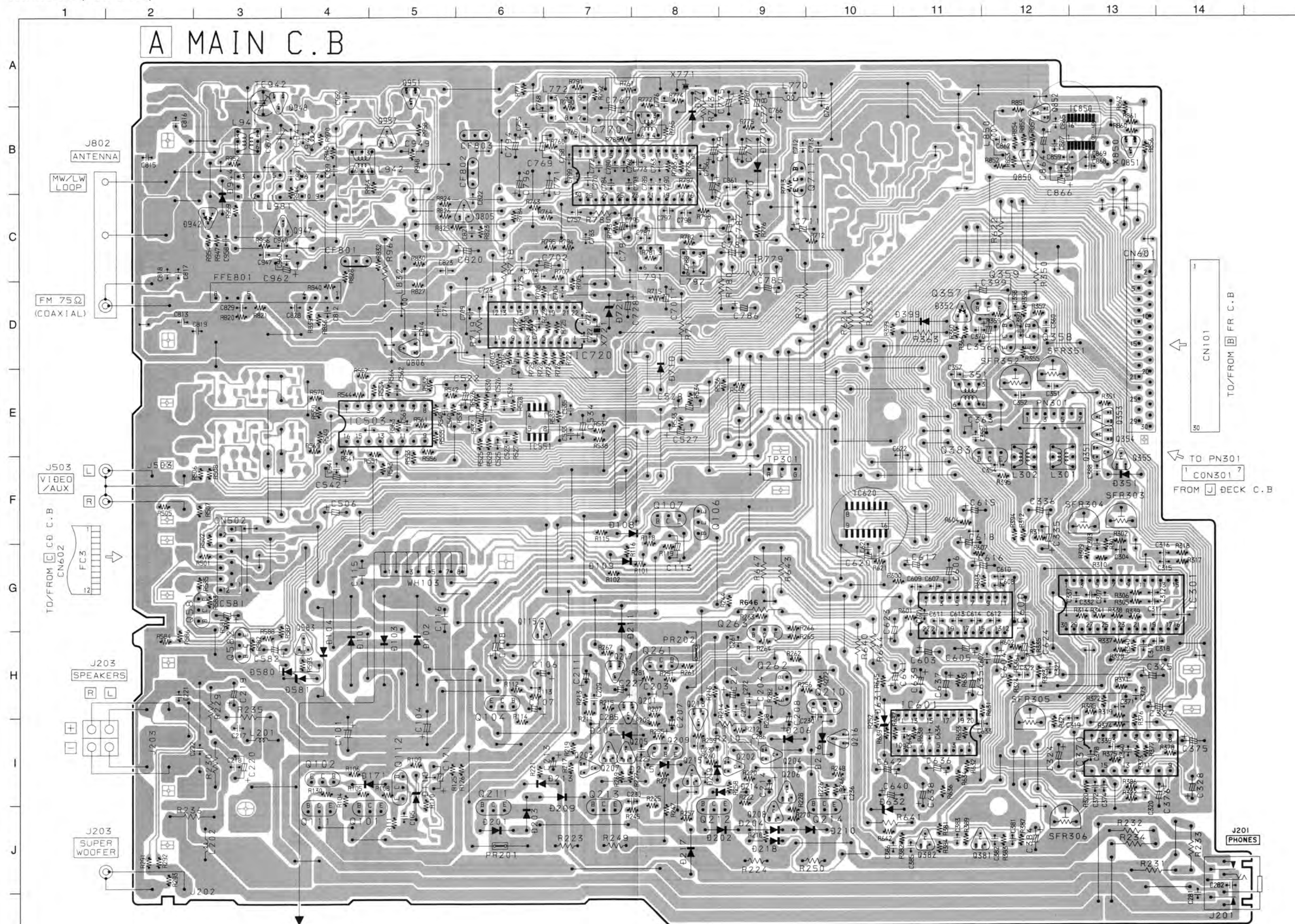
A MAIN C.B



SCHEMATIC DIAGRAM-1 (MAIN: LH)

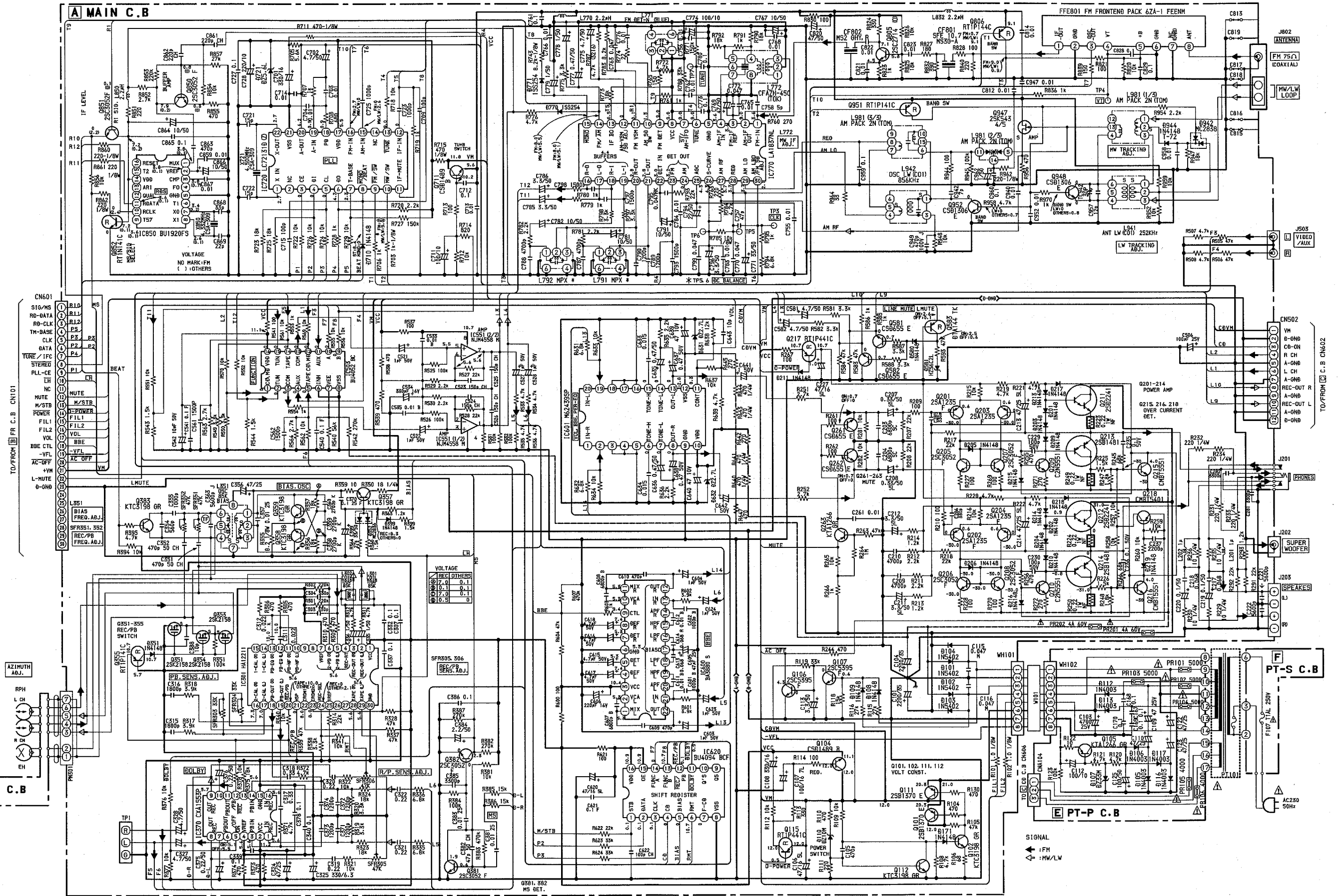


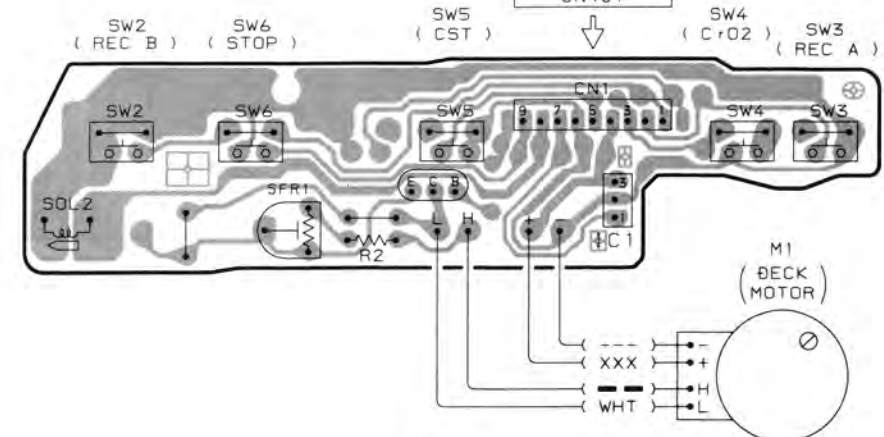
A MAIN C.B



TO/FROM
PT-S C.B WH102

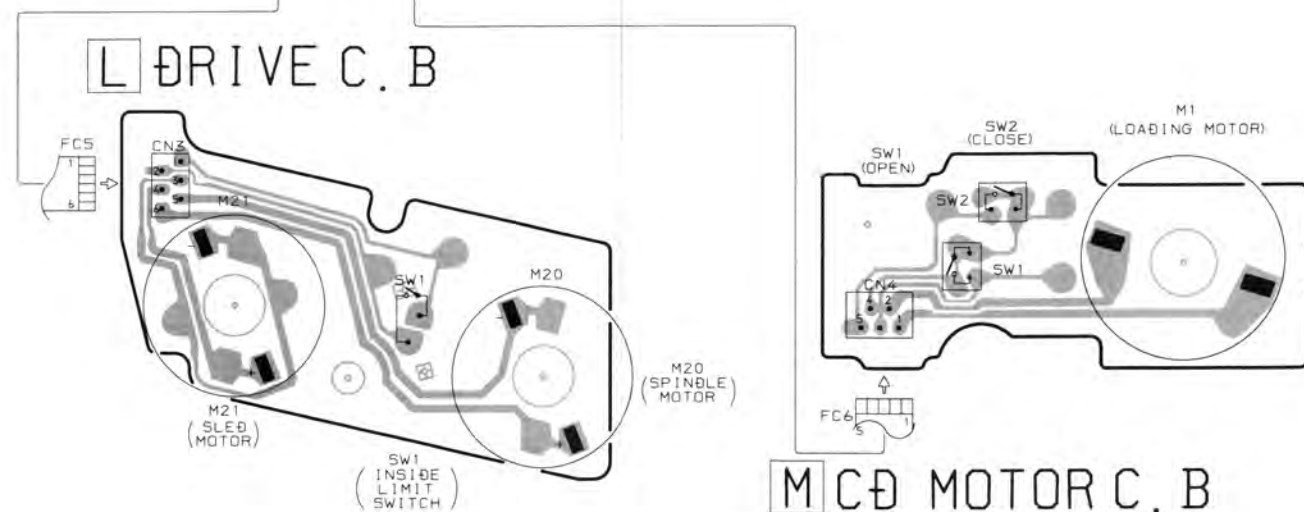
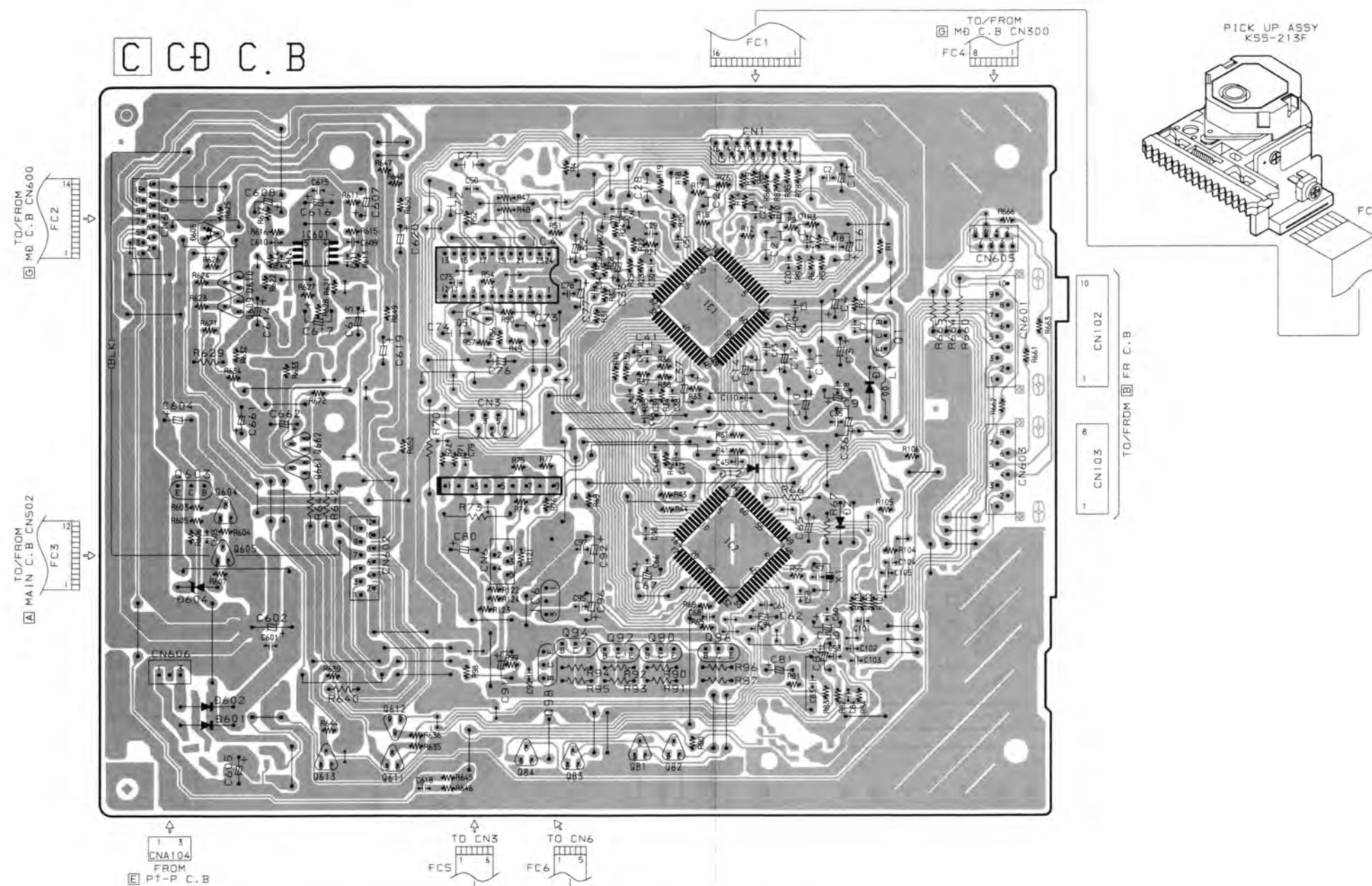
TO/FROM FR C.B
CN101
TO PN301
CON301
FROM DECK C.B

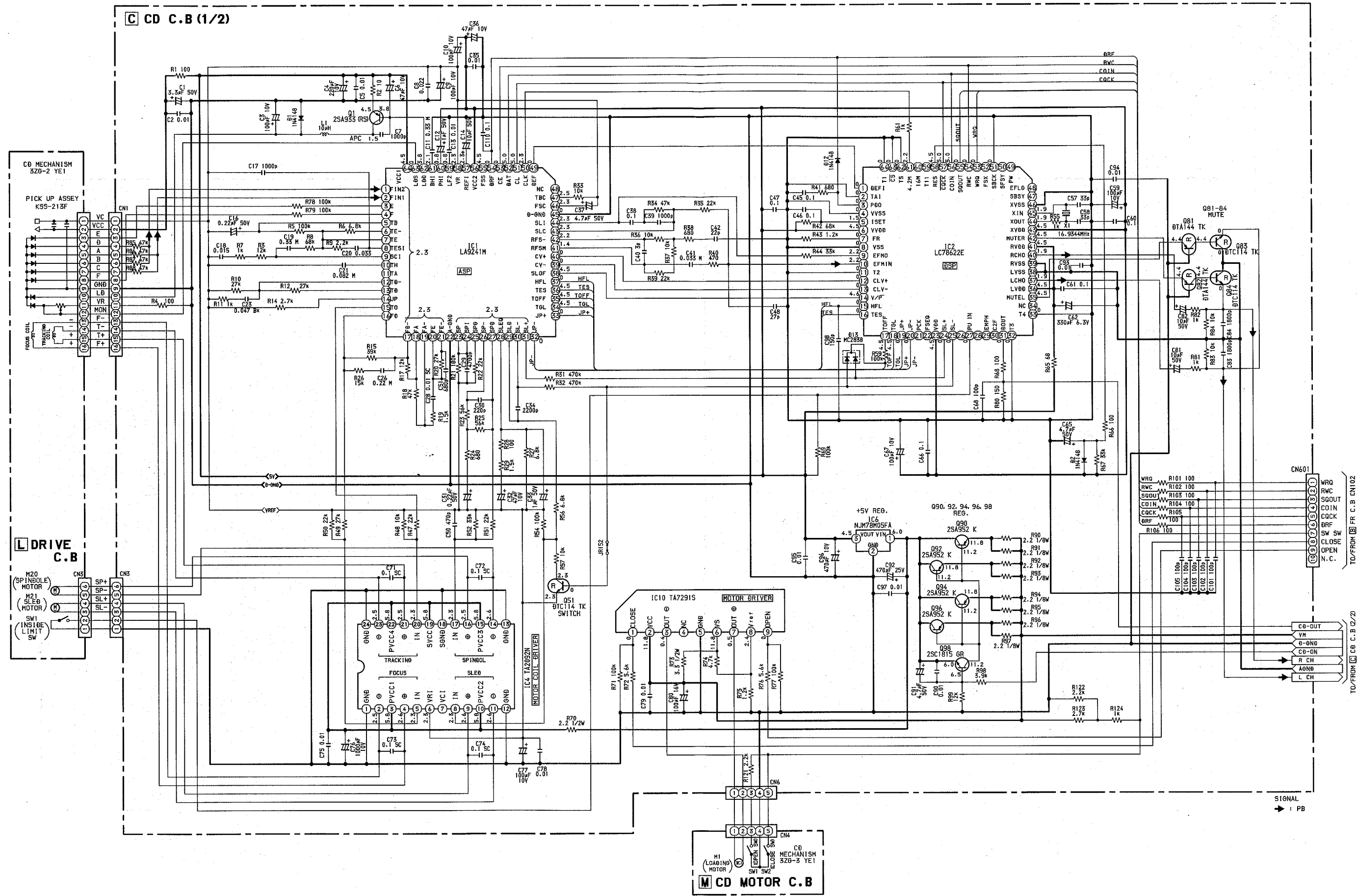


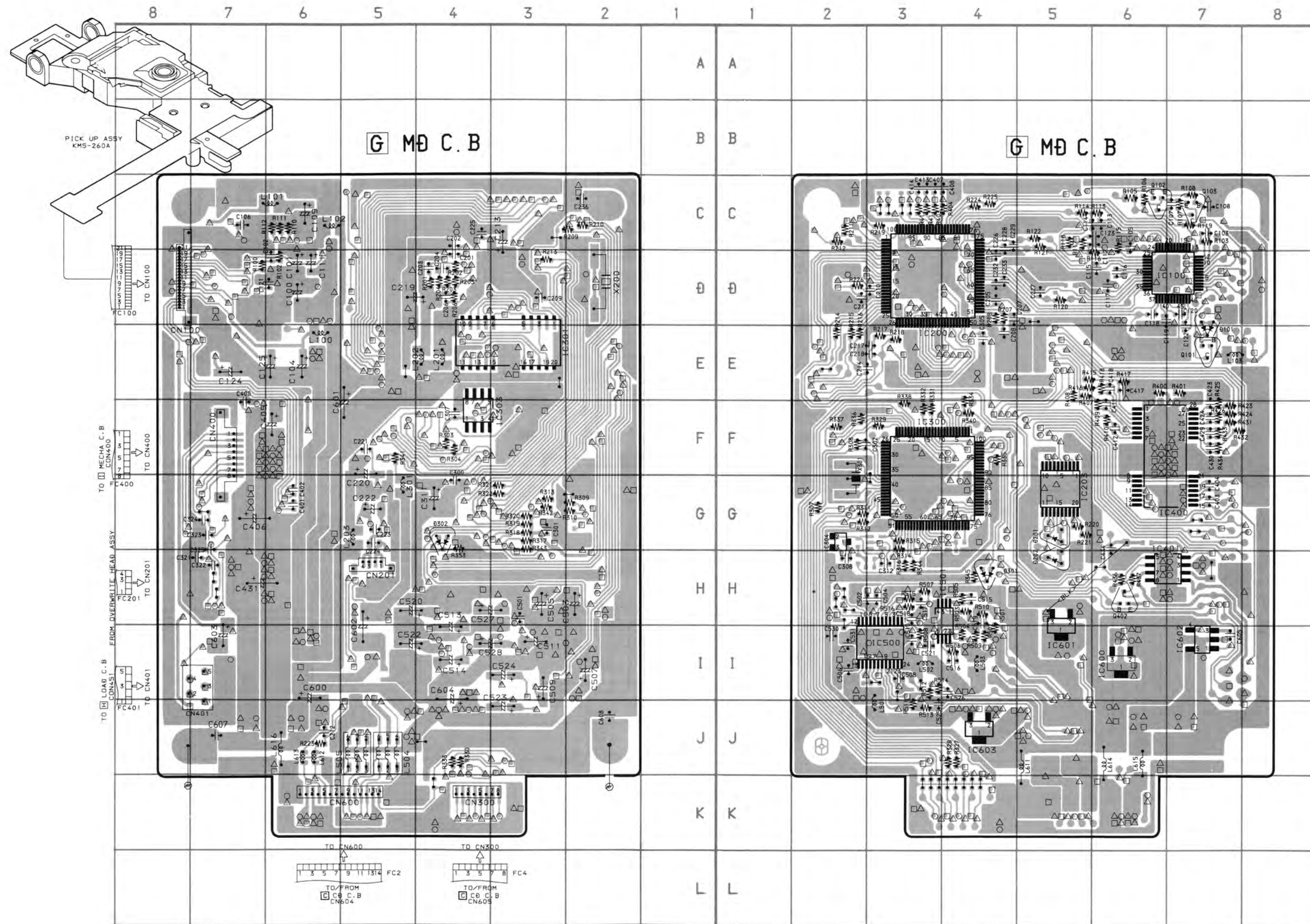


1 2 3 4 5 6 7 8 9 10 11 12 13 14

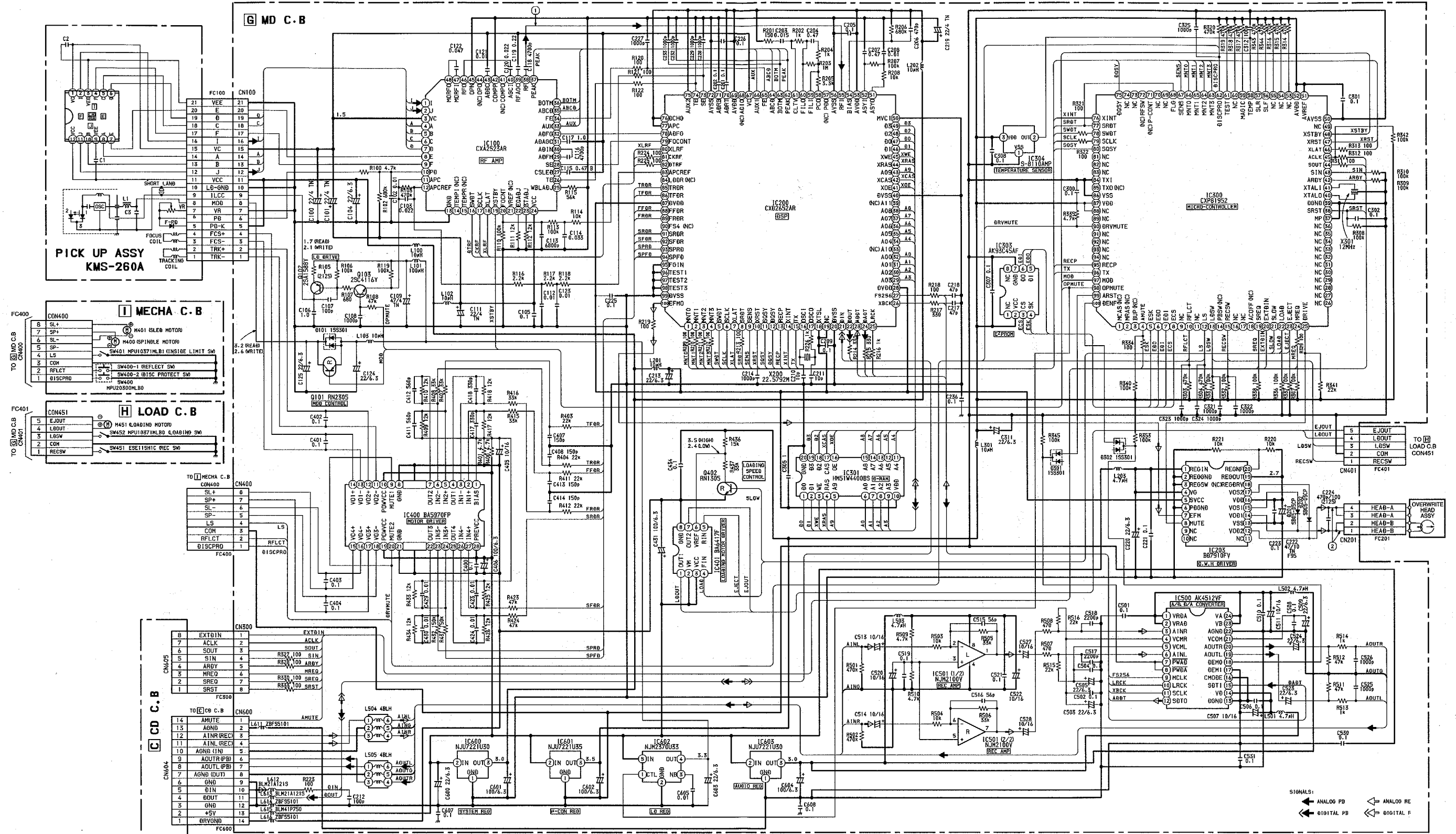
A
B
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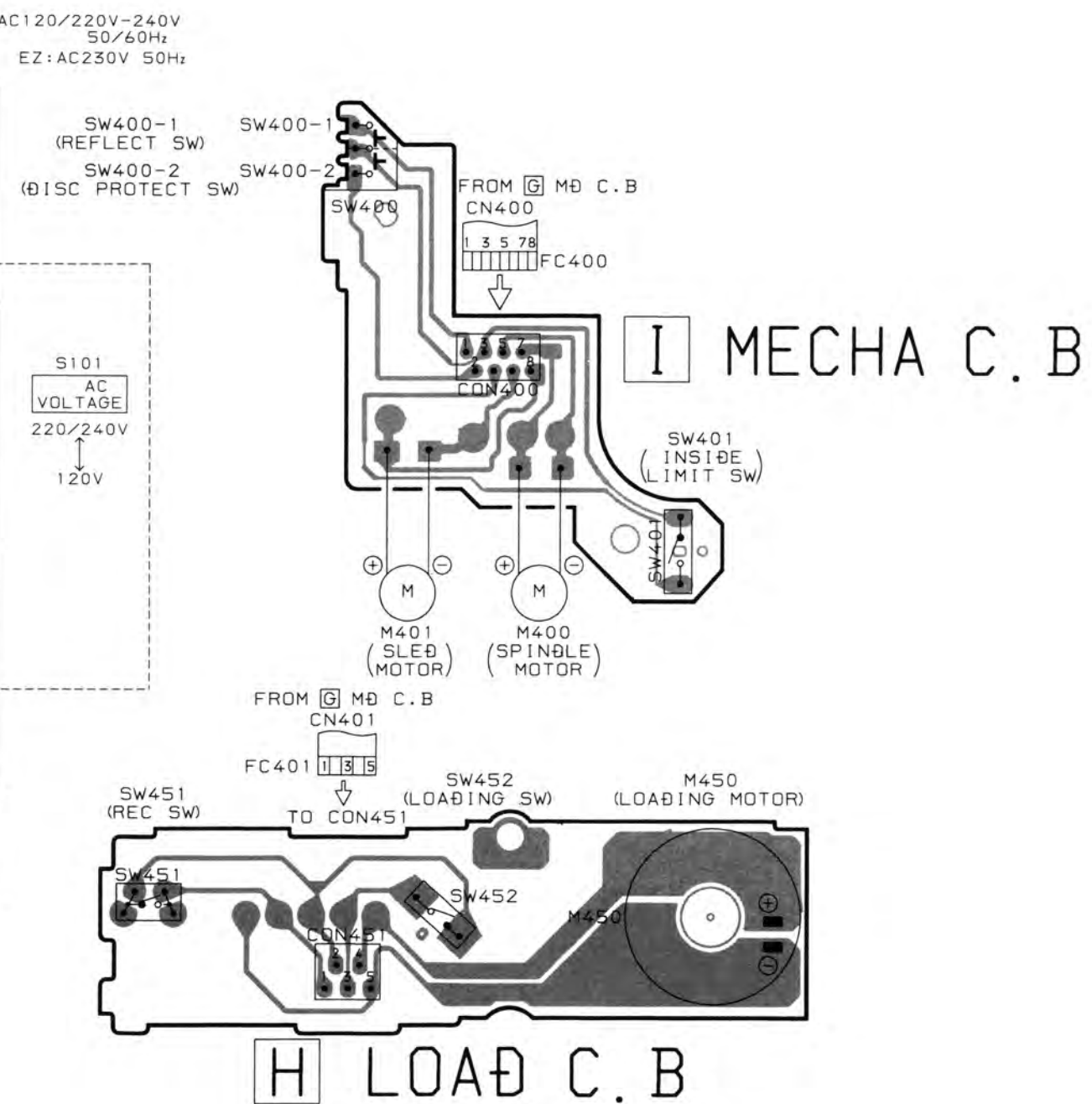
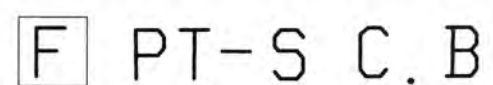




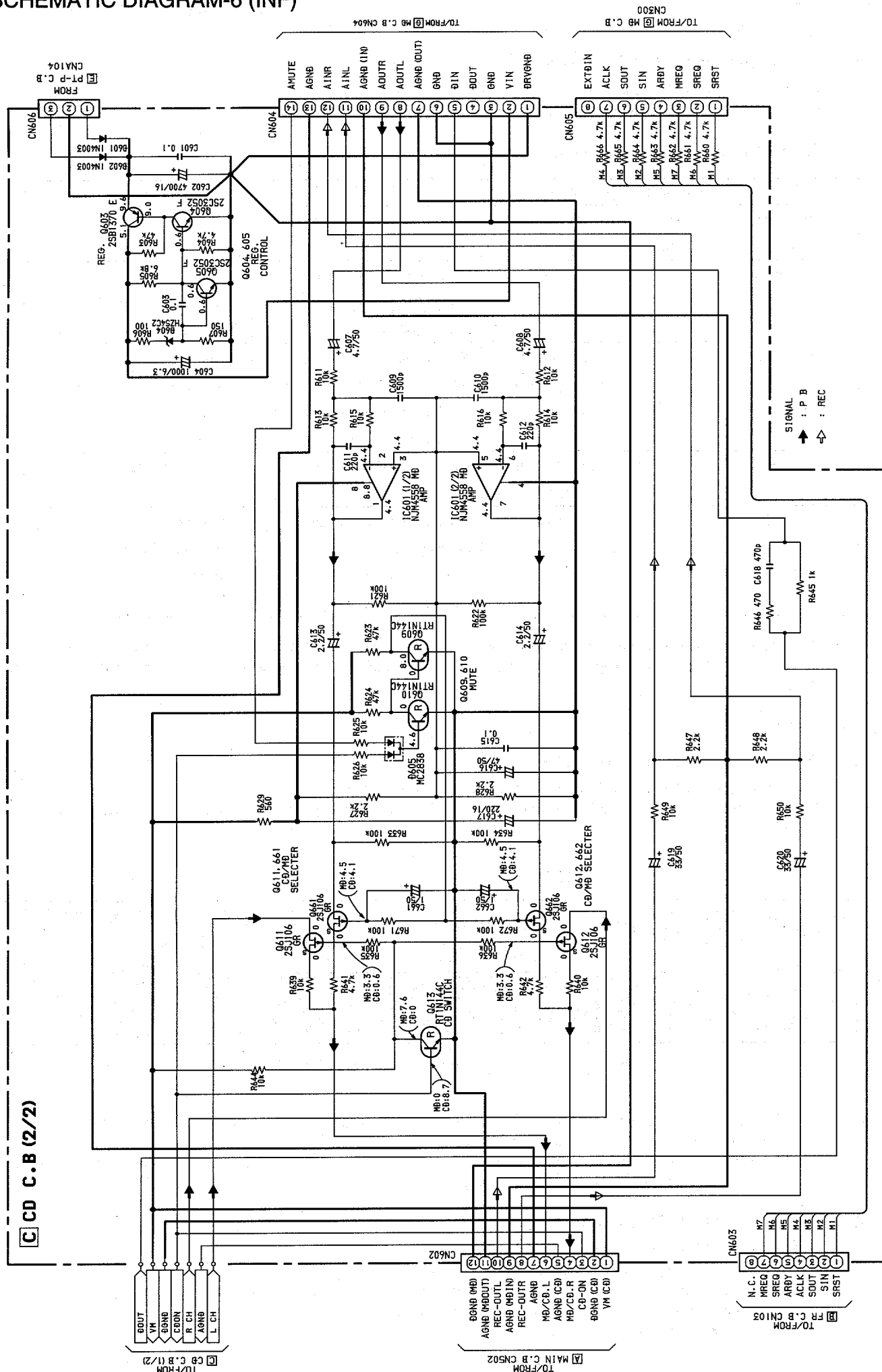


SCHEMATIC DIAGRAM-5 (MD)





SCHEMATIC DIAGRAM-6 (INF)



TEST MODE

1. CD Test Mode

1-1. How to Start Up the CD Test Mode

While pressing the “CD function” button, connect the AC plug to the power outlet.

When the CD test mode is started up, the message “CD TEST” is displayed.

1-2. Function Description of the Test Mode

MODE	Operation	Indication on display	Function	Contents
Start mode	Starting up the test mode	CD TEST		
Search mode	■	CD	Continuous focus searching. The pickup lens repeats the full-swing up-down motion * Note	Check AC circuit. Laser current measurement. Focus error waveform check.
Play mode	◀ ▶	Track No. and playing time are displayed	Normal playback. When the TOC reading is not possible, the same movement as in the search mode.	Focus servo. Tracking servo. CLV servo. Sled servo.
Traverse mode		Track No. and playing time flash	Playback PAUSE mode	Tracking servo OFF.
Sled mode	▶▶ ◀◀	CD TEST	The pickup moves to the innermost track The pickup moves to the outermost track	Sled servo. Check operation of the mechanism.

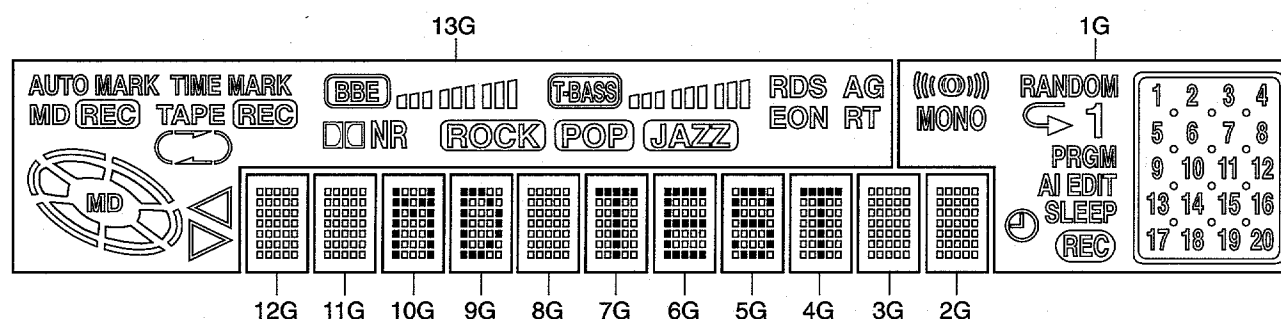
Note: If the focus search operation is continued for 10 minutes or longer, heating of the driver IC is accumulated to trigger the protection circuit that will stop operation of the CD system. Turn off the main power and re-start operation about 10 minutes later.

2. MD Test Mode

2-1. How to Start Up the MD Test Mode

While pressing the “MD function” button, connect the AC plug to the power outlet.

About three seconds later after the MD test mode has started up, the following message appears and the MD test mode becomes operable.



- Note:**
1. If operation of the mechanism shows any abnormality during the test mode, disconnect the AC plug immediately.
 2. The playback and recording operations are not possible during the test mode.
 3. There can be a case that a disc cannot be inserted. In such a case, insert the disc a little and press the “CD → MD DIRECT REC” button. The disc can be inserted to the very end.

2-2. How to Exit the CD Test Mode

- 1) Press the EJECT button to remove the disc.
 - 2) Disconnect the AC plug from the power outlet.
- * If the machine exits the MD test mode by any methods other than the procedure as described above, the machine may operate abnormally when the POWER is turned on next time.
In such a case, disconnect the AC plug.

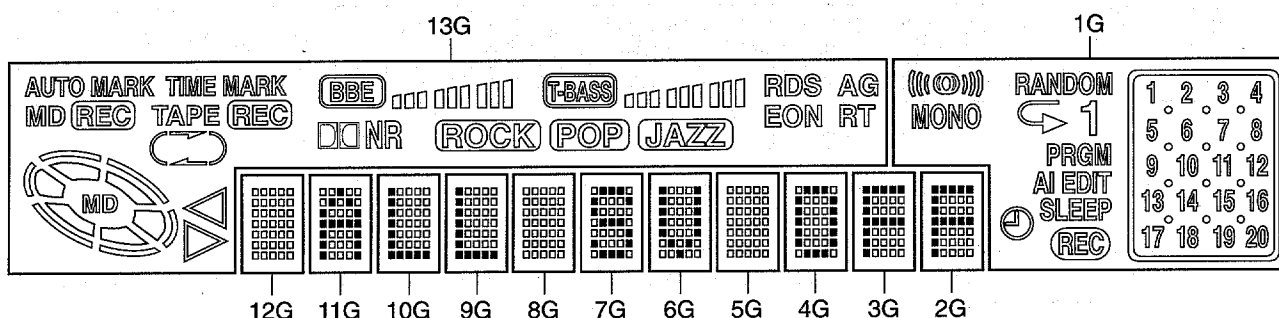
2-3. Operation Check Mode

- 1) Checks after the test mode has started up
The following playback audio circuits can be checked.
 - The circuits that can be checked: DAC, LINE AMP, HEADPHONES AMP
 - Output level: 1 kHz, -21 dB
- 2) Switch status check
ON/OFF statuses of the respective switches of the machine and mechanism can be checked on display.

Switch Name	Switch State	Indication on Display	Usable disc
REC PROTECT	When the write-protection tab of a disc is closed to ON	ROCK	Record/playback disc
REFLECT	When the high reflection disc (CD) is used	POP	Playback only disc
INNER	When the pickup is the positioned at the innermost track (when the LIMIT switch is ON)	JAZZ	—

2-4. How to Switch to Servo Standby Mode

When the MD test mode has been established, the mode is changed to the servo standby mode and "ALL SV OFF" is displayed by pressing the ■ (CLEAR) button. The following various check modes can be entered from this mode. Returns to "ALL SV OFF" by pressing the ■ button.



2-5. Checking the Sled Operation

- 1) Pickup moves to the outmost track by pressing the ►► (F.SKIP) in the "ALL SV OFF" state. The message "T.SLED FWD" is displayed.
- 2) Pickup moves to the innermost track by pressing the ◄◄ (B.SKIP) in the "ALL SV OFF" state. The message "T.SLED FWD" is displayed.

2-6. Checking the Laser Output

- 1) The laser power output level can be switched by every pressing of the "MD EDIT" in the "ALL SV OFF" state. The laser power output is repeatedly changed in the following order of: OFF → LASER READ → LASER 1/2 → LASER WRITE → OFF. The displays are shown as described by the following table.

MODE	Indication on display
OFF	ALL SV OFF
LASER READ	LASER READ
LASER 1/2 WRITE	LASER 1/2
LASER WRITE	LASER WRITE

- 2) After confirming the message, press the ■ button to turn off the "ALL SV OFF" display.

2-7. Checking Operation of OWH (Over Write Head)

The OWH can be moved up and down by pressing the "CD → MD DIRECT REC" and the "EJECT" buttons in the state of loading-completed.

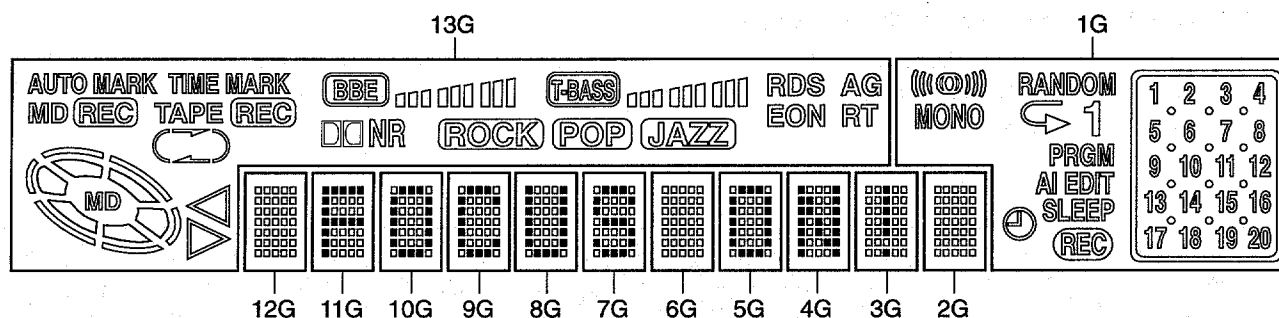
"CD → MD DIRECT REC" button OWH DOWN
 "EJECT" button OWH UP

Note: Do not move down the OWH down when the high reflection disc (CD) is in use.

2-8. Checking the Servo Operation

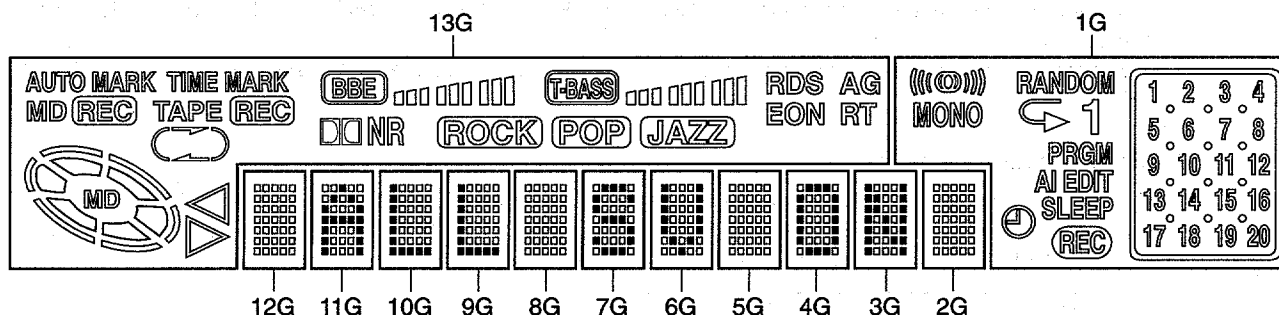
- Checking the focus search spindle kick
 - 1) The focus search operation and the spindle kick operation can be performed continually by pressing ◀▶ (PLAY) button from the "ALL SV OFF" state without inserting a disc. During this check, the message "FOCUS SRCH" is displayed.
 - 2) After checking these operations, press the ■ button to return to the "ALL SV OFF" state.
- Checking the focus servo
 - 1) Insert the test DISC.
 - 2) Move the optical pickup to the center track or its around of a disc using the ▶▶ and the ◀◀ buttons.
 - 3) Press the "MODE" button until the following servo mode is selected in accordance with the inserted DISC.
 - * MO DISC (MO) Select the "SELECT GRV" indication on the display.
 - * PIT DISC (CD) Select the "SELECT PIT" indication on the display.
 - 4) Press the ◀▶ button.

When the focus servo is operating normally, the message "FOCUS ON!" is displayed after "FOCUS SRCH".



- 5) After the checking is completed, press the ■ button to return to the "ALL SV OFF" state.
- * Checking that the all servo loops are turned ON
 - 1) The tracking servo and the sled servo are turned on and all servo loops work when the "ENTER" button is pressed in the state of "FOCUS ON!".

When all servo loops are normal, "ALL SV ON" is displayed.



- 2) After the checking is completed, press the ■ button to return to the "ALL SV OFF" state.

2-9. Adjustment Mode

Name of adjustment: Temperature compensation adjustment

Test point: Check the indication on the display.

Jig: Thermometer

Adjustment procedure:

- 1) Start up the MD test mode and press the ■ button to show the message "ALL SV OFF" on display.
- 2) Press the "DISPLAY" button to switch the display to "TEMP=\$◇◇".
- 3) Press the || (PAUSE) button to switch the display to "TEMP + **: +00".
- 4) Place the thermometer near the MD mechanism to measure the room temperature.
- 5) Adjust the indication value on display until the room temperature is the same as the indicated temperature ** on the display using the ▶▶ and ◀◀ buttons. After adjustment is complete, press the "ENTER" button.
- 6) After the adjustment is completed, press the ■ button to return to the "ALL SV OFF" state.
- 7) After the above settings are completed, reduce or add the value indicated by the sharp sign (#) of "TEMP + **: +00" from or to the value indicated by the asterisk (**) of "TEMP + **: +00". The calculated value must be the room temperature.

Note: If the room temperature cannot be measured, do not adjust the above item.

3. Laser Power Adjustment

Test point: Pickup laser output

Jig: Laser power meter

Adjusting procedure:

- 1) Press the "MD EDIT" button three times in the state of "ALL SV OFF" in order to switch the display to "LASER WRITE".
- 2) Press the $\blacksquare$ button once to show the "LASER = \$**".
- 3) Measure the laser output of the pickup unit using a laser power meter. Adjust the laser output value for 6.8 ± 0.03 mW by pressing the $\blacktriangleright$ and $\blacktriangleleft$ buttons. After adjustment, press the "ENTER" button.
- 4) After the adjustment is completed, press the $\blacksquare$ button to return to the "ALL SV OFF" state.

Note: If the laser output exceeds 7.0 mW, the pickup may be damaged.

4. Auto Sequence Adjustment (EFB Adjustment, IVR Adjustment, Focus AGC Adjustment and Tracking AGC Adjustment)

Test disc: MDW-60, TGYS-1

When using the MO disc for adjustment:

- 1) Insert the test disc MDW-60.
- 2) Press the $\blacksquare$ button to show "ALL SV OFF" on display.
- 3) Press the "MODE" button to show "SELECT GRV" on display.
- 4) When the "MD function" button is pressed, "AUTO ADJ" is displayed. When the adjustment is completed, "DONE" is displayed. (If "FAILED" is displayed, it shows that the adjustment has failed and is not performed.)
- 5) After the adjustment is completed, press the $\blacksquare$ button to return to the "ALL SV OFF" state.

Note: 1. Be sure to use the clean disc because the adjustment cannot be ensured if the dirty disc or the scratches on a disc is used.
2. Be sure to use an MO disc that is permitted to record a new data because the MO disc is tested by writing power and a part of the recorded data is erased.

How to check the IVR, EFB, Focus/Tracking/Sled Gains

- ① Move the optical pickup to the center track or its around of a disc using the $\blacktriangleright$ and the $\blacktriangleleft$ buttons.
- ② Press the $\blacktriangleleft \blacktriangleright$ button to show "FOCUS ON!" on display.
- ③ Press the "ENTER" button to switch the mode to "ALL SV ON".
- ④ Press the $\blacksquare$ button and press twice the "DISPLAY" button.
Check that the indication value on the display "IV\$*:EF\$◇◇" is within the range as follows below.
"*\$" 03-07
"◇◇" 09-12
- ⑤ Press the "DISPLAY" button again.
Check that the indication value on the display "Gf*t##s△△" is within the following ranges.
"*\$" 20 to 40
"##" 15 to 35
"△△" 15 to 35
- ⑥ After the checking is completed, press the $\blacksquare$ button to return to the "ALL SV OFF" state.

When using the PIT disc for adjustment:

- 1) Insert the test disc TGYS-1.
- 2) Press the $\blacksquare$ button to show "ALL SV OFF" on display.
- 3) When the "MD function" button is pressed, "AUTO ADJ" is shown on display. When adjustment is completed, "DONE" is displayed. (If "FAILED" is displayed, it shows that the adjustment has failed and is not performed.)
- 4) After the adjustment is completed, press the $\blacksquare$ button to return to the "ALL SV OFF" state.

Checking Method of IVR, EFB, Focus/Tracking/Sled Gain

Perform the same operation as that of the "When using the MO disc for adjustment" and confirm that the values on the display are within the following ranges.

"TVR" 13 to 17
"EFB" 09 to 12
"Focus gain" 2A to 45
"Tracking gain" 20 to 40
"Sled gain" 20 to 40

5. Checking Focus Servo and Error Rate (PIT Disc)

- 1) Insert the test disc TGYS-1.
- 2) Move the optical pickup to the center track or its around of a disc using the ►► and the ◄◄ buttons.
- 3) Press the "MODE" button to show "SELECT PIT" on the display.
- 4) Press the ◄ ► button to show "FOCUS ON!" on the display..
- 5) Press the "ENTER" button to show "ALL SV ON" on the display. Then press the "DISPLAY" button once to check that the address display advances with regularity.
- 6) Press the "DISPLAY" button again to show the playback error rate on display and check that the value shown by the asterisks (****) of "Er****:####" is "0030" or less.
- 7) After the adjustment is completed, press the ■ button to return to the "ALL SV OFF" state.

6. Checking Record/Playback Error Rate (MO Disc)

- 1) Insert the test disc MDW-60.
- 2) Move the optical pickup to the center track or its around of a disc using the ►► and the ◄◄ buttons.
- 3) Press the "CD function" button to start recording from 600 cluster.
- 4) After about 15 seconds of recording, press the ■ button to show "ALL SV OFF" on display.
- 5) Press the "AUX" button to enter the "ALL SV ON" mode. Then press the "DISPLAY" button at around the 600 cluster. Check that the value of "Er****:####" is "0020" or less.
- 6) After adjustment, press the ■ button to show "ALL SV OFF" on display.

7. UTOC ERASE

Perform this item only when the recorded disc should be erased.

- 1) Insert the disc from which UTOC is to be erased.
- 2) Move the optical pickup to the center track or its around of a disc using the ◄◄ ◄◄ and the ►► ►► buttons.
- 3) Press the "MODE" button to show "SELECT GRV" on the display.
- 4) Press the "MD REC" button to show "REC Analog" on the display.
- 5) Press the MD ◄ ► button to show "FOCUS ON!" on the display.
- 6) Press the "ENTER" button to show "ALL SV ON" on the display.
- 7) Press the ● button to show "UTOC ERASE" on the display and UTOC is erased.
- 8) After erasing UTOC, "ALL SV OFF" is displayed.

SERVICE JIG AND TOOLS

Use the following jigs when opening the C.B boards.

NAME	PART NO
JIG, P-CD BY TORIKOSHI	SV-J00-018-010
FF-CABLE, 16P 1.0 250mm	87-CE1-640-010

ELECTRICAL ADJUSTMENT

