

# SERVICE MANUAL

MD/CD STEREO SYSTEM

BASIC TAPE MECHANISM : TN-21ZSC-2003

BASIC CD MECHANISM : DA11T3C

BASIC MD MECHANISM : AZG-4 A

SYSTEM	SPEAKER	REMOTE CONTROLLER
LCX-MD211	SX-MD210	RC-AAT11

- This Service Manual is the "Revision Publishing" and replaces "Simple Manual" LCX-MD210(D), LCX-MD211(EZ), (S/M Code No. 09-003-429-4T2).

# aiwa

S/M Code No. 09-007-429-4R2

REVISION

DATA

# SPECIFICATIONS

## MAIN UNIT

### FM tuner section

Tuning range 87.5 MHz to 108 MHz  
Antenna terminals 75 ohms (unbalanced)

### MW tuner section

Tuning range 531 - 1,602 kHz (9 kHz step)  
530 - 1,702 kHz (10 kHz step)  
Antenna Loop antenna

### LW tuner section

Tuning range 144 - 290 kHz  
Usable sensitivity 1400uV/m  
Antenna Loop antenna

### Amplifier section

Power output Rated: 5.5W + 5.5W (4 ohms, T.H.D.  
1%, 1kHz/DIN 45500)  
Reference: 7.0W + 7.0W (4 ohms, T.H.D.  
10%, 1kHz/DIN 45324)  
DIN MUSIC POWER 10W + 10W  
AUX: 800mV  
SPEAKERS: accept speakers of 4 ohms  
or more  
PHONES (stereo minijack): accepts  
headphones of 32 ohms or more

Input  
Output

### Cassette deck section

Track format 4 tracks, 2 channels stereo  
Frequency response Normal tape: 50 - 10000 Hz  
Recording system AC bias  
Erasure system Magnet erase  
Heads Recording/playback head (1),  
Erase head (1)

### Compact disc player section


Laser Semiconductor laser ( $\lambda = 780\text{nm}$ )  
D-A converter 1 bit linear  
Wow and flutter Unmeasurable

### MD recorder section

Scanning method Non-contact optical scanner  
(Semiconductor laser application)  
Recording system Magnetic polarity modulation overwrite  
system  
Rotation speed Approx. 400 to 900 rpm (CLV)  
Sampling frequency 44.1 kHz  
No. of channels Stereo: 2 channels  
A-D, D-A converter 1-bit  
Frequency 200 to 20000 Hz +0.5 - -1.5dB  
Wow and flutter Unmeasurable

### SPEAKER SYSTEM

Speakers 100 mm cone type, 4 ohms  
Impedance 4 ohms  
Dimensions (W x H x D) 130 x 262.5 x 215 mm  
Weight 1.3 kg

- Design and specifications are subject to change without notice.
- Manufactured under license from Dolby Laboratories Licensing Corporation.  
"DOLBY", the double-D symbol  and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.

## ACCESSORIES / PACKAGE LIST

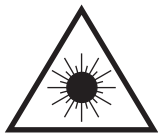
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-CJB-906-010	IB, EZ (9L) I	
2	87-A90-030-010	ANT, LOOP AM-NC C	
3	87-A90-118-010	ANT, WIRE FM (Z)	
4	8A-CLB-961-110	RC UNIT, RC-AAT11	

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

### VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

### WARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstråling, som överskrider gränsen för laserklass 1.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### ATTENTION

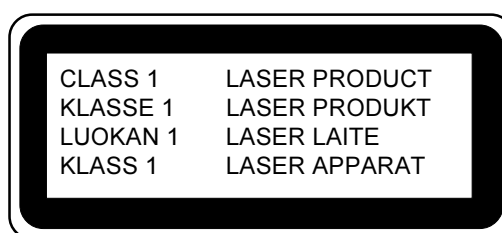
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

### ADVARSEL

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.

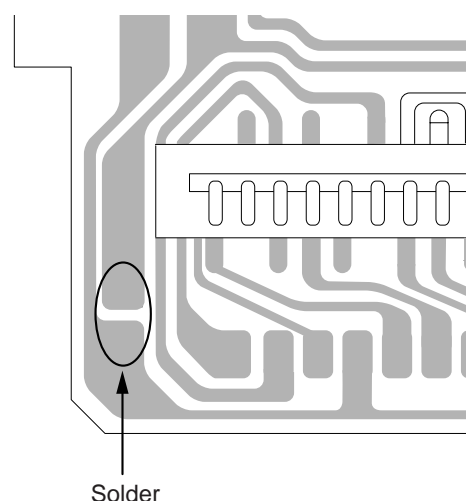


### Precaution to replace Optical block

## (SF-P101NR)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

- 1) After the connection, remove solder shown in the right figure.

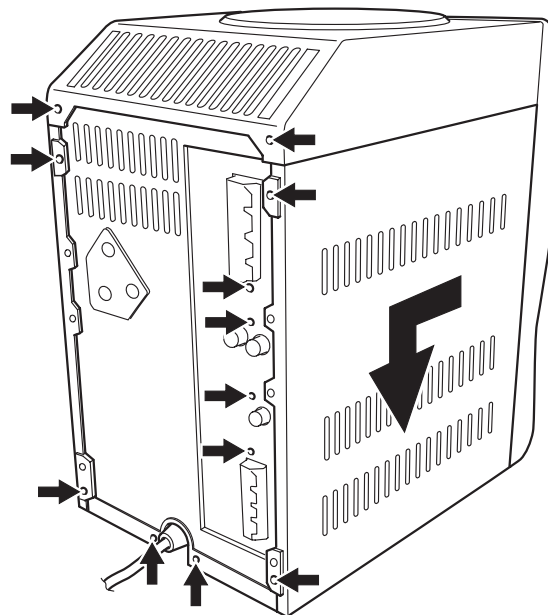


## DISASSEMBLY INSTRUCTION

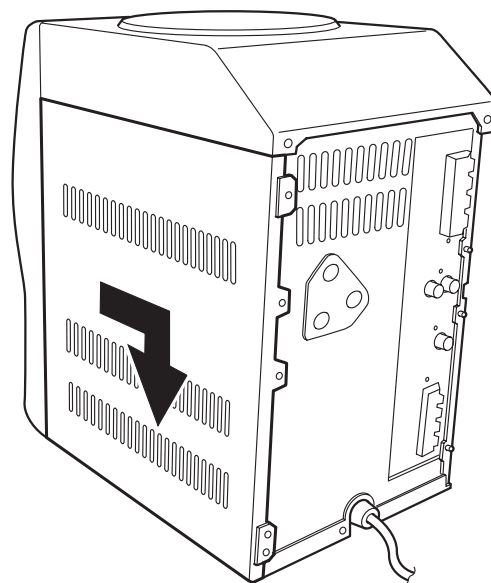
### 1. Removing CD Mechanism, CHAS, CD

1-1. Remove 12 screws (BVT2+3-10).

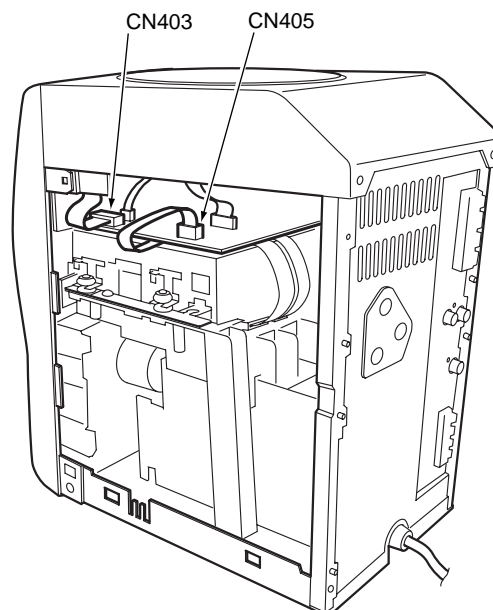
Pull the panel, L in the rear direction, and press it in the bottom direction to remove it.



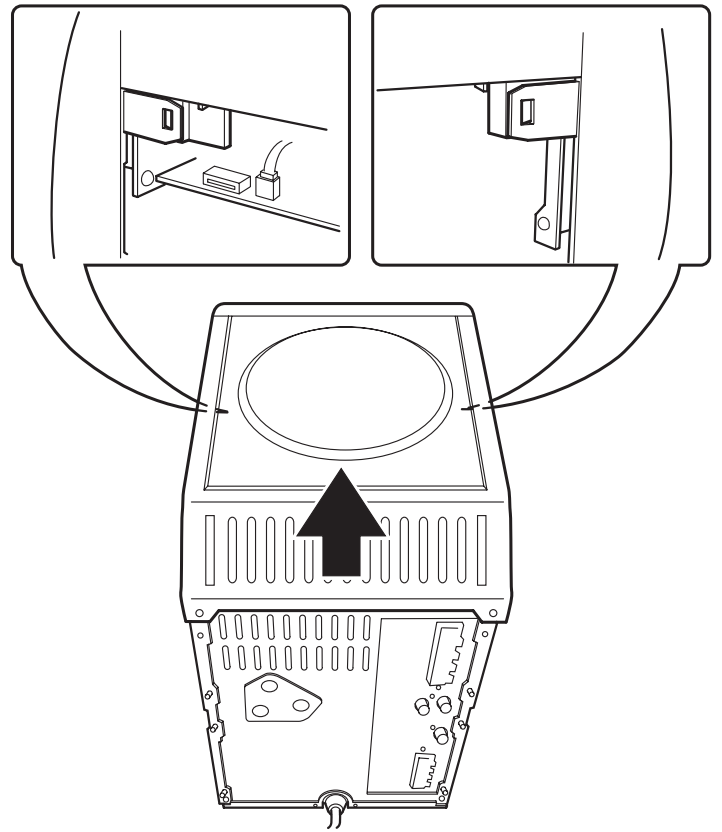
1-2. Remove the panel, R in the same way as for L.



1-3. Disconnect the 8P flat cable from CN403 and the 7P flat cable from CN405 on the CD C.B.

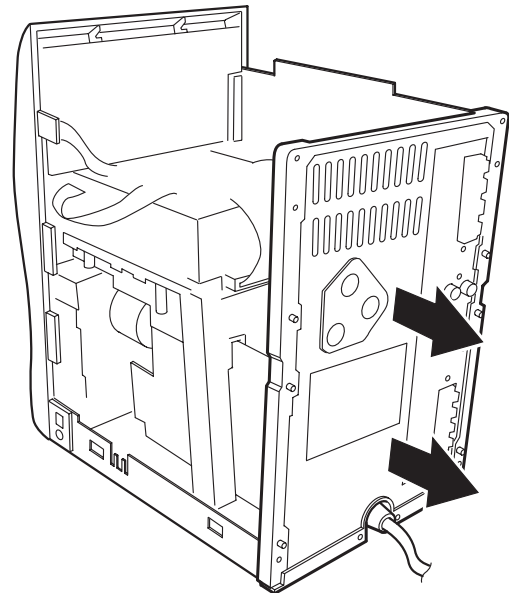


1-4. Release the tabs on both sides at the top of front cabinet, and lift the rear of CHAS, CD to remove the CHAS, CD, CD mechanism and CD C.B. in one unit.

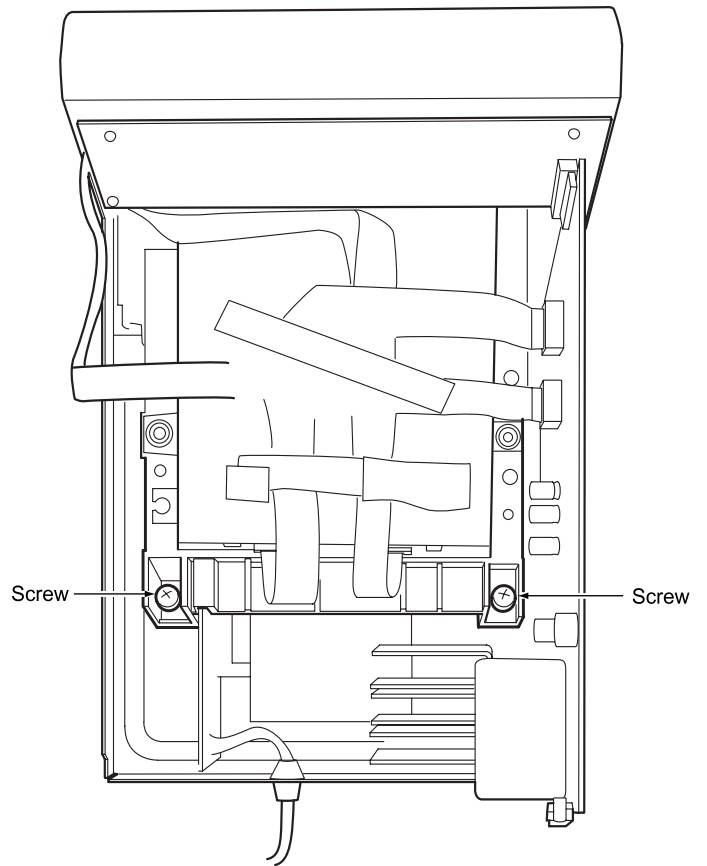


## 2. Removing MD Mechanism

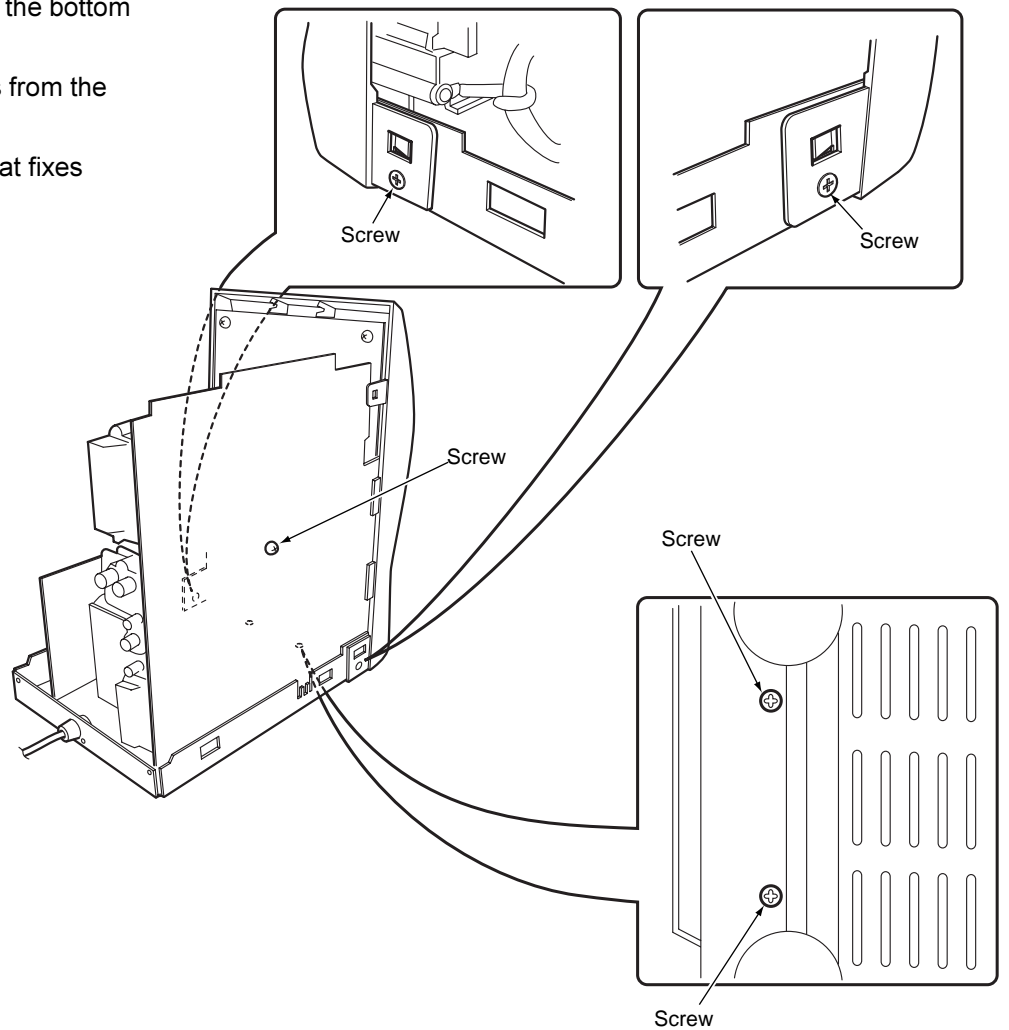
2-1. Remove the panel, rear.



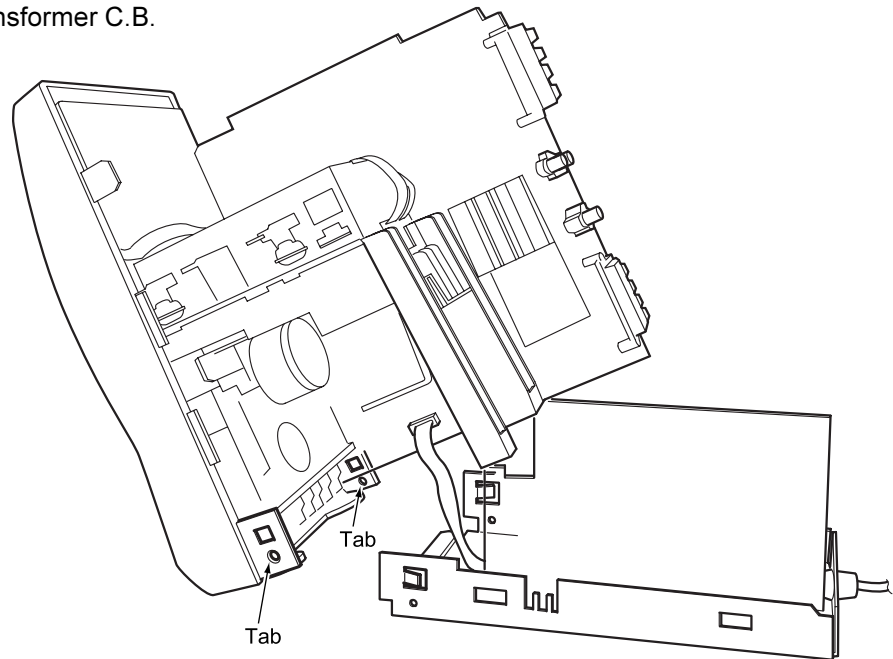
2-2. Remove two screws (BVT2+3-10) that fix the CHAS, MD to the CHAS, MAIN.



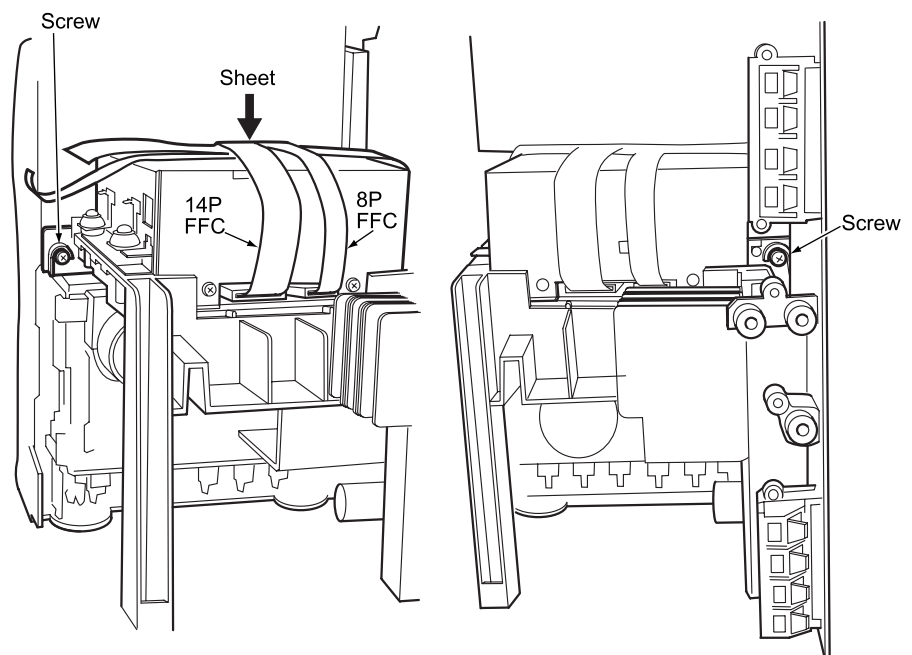
2-3. Remove two QT2+3-8 screws at the bottom of both sides of front cabinet.  
Remove two BVT2+3-10 screws from the bottom of CHAS, MAIN.  
Remove the BXT2+3-6 screw that fixes the CHAS, MD to the MAIN C.B.



- 2-4. Release the tabs of front cabinet, and remove the CHAS, MAIN with the power transformer C.B.



- 2-5. Remove two screws (BVT2+3-10) that fix the CHAS, MD to the front cabinet.  
Disconnect the flat cables (14P, 18P) from the MD mechanism, and remove the sheets that hold the cables.  
Remove the MD mechanism with the CHAS, MD.



# ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC				C204	87-010-197-080		CAP, CHIP 0.01 DM
	87-A20-459-010		C-IC, LC78622ED	C225	87-010-401-080		CAP, ELECT 1-50V
	87-A21-213-010		IC, BA17808T	C226	87-010-401-080		CAP, ELECT 1-50V
	87-002-849-080		IC, NJM78L06A	C227	87-018-208-080		CAP 0.047-50F
	87-A20-446-010		C-IC, LA9241ML	C228	87-018-208-080		CAP 0.047-50F
	87-A21-093-010		IC, LA6541D	C229	87-018-132-080		CAP, CER 2200P-16V
	87-A20-976-040		C-IC, TC74HCT7007AF	C230	87-018-132-080		CAP, CER 2200P-16V
	87-070-127-110		IC, LC72131 D	C231	87-010-406-080		CAP, ELECT 22-50
	87-A20-913-010		IC, LA1837NL	C232	87-010-406-080		CAP, ELECT 22-50
	87-A20-440-040		C-IC, BU1920FS	C233	87-010-260-080		CAP, ELECT 47-25V
	87-A21-364-010		IC, NUM7806FA	C234	87-010-404-080		CAP, ELECT 4.7-50V
	87-A21-443-040		C-IC, M62495AFP	C235	87-010-112-080		CAP, ELECT 100-16V
	87-A21-020-010		IC, TA8223K	C236	87-010-112-080		CAP, ELECT 100-16V
	87-A21-431-010		IC, BA4560N	C237	87-010-237-080		CAP, ELECT 1000-16V
	8A-CJB-633-010		C-IC, LC877264A-EZ	C238	87-010-237-080		CAP, ELECT 1000-16V
	87-A21-482-010		IC, RPM6938-H4	C241	87-018-209-080		CAP, CER 0.1-50V
TRANSISTOR				C243	87-010-387-080		CAP, E 470-25 SME
	89-213-702-010		TR, 2SB1370E (1.8W)	C244	87-010-754-080		CAP, E220-10 SRA 7L
	87-026-291-080		TR, DTC124XS	C245	87-010-196-080		CHIP CAPACITOR, 0.1-25
	87-026-215-080		TR, DTC114YS	C249	87-010-401-080		CAP, ELECT 1-50V
	87-026-610-080		TR, KTC3198GR	C250	87-010-401-080		CAP, ELECT 1-50V
	89-406-555-080		TR, 2SD655E (0.5W)	C251	87-010-401-080		CAP, ELECT 1-50V
	89-109-521-080		TR, 2SA952K (0.6W)	C252	87-010-401-080		CAP, ELECT 1-50V
	87-A30-216-080		TR, 2SA933AS (R)	C255	87-010-401-080		CAP, ELECT 1-50V
	89-113-187-080		TR, 2SA1318TU	C256	87-010-401-080		CAP, ELECT 1-50V
	87-026-239-080		TR, DTC114TK (0.2W)	C257	87-010-401-080		CAP, ELECT 1-50V
	87-026-210-080		CHIP-TR, DTC144EK	C258	87-010-401-080		CAP, ELECT 1-50V
	89-112-965-080		TR, 2SA1296GR (0.75W)	C259	87-010-401-080		CAP, ELECT 1-50V
	87-026-263-080		C-TR, RN1410	C260	87-010-401-080		CAP, ELECT 1-50V
	87-026-237-080		CHIP-TR, DTC124XK	C262	87-010-401-080		CAP, ELECT 1-50V
	89-320-011-080		TR, 2SC2001K (15W)	C263	87-010-401-080		CAP, ELECT 1-50V
	87-A30-072-080		C-TR, RT1P 144C	C270	87-010-322-080		C-CAP, S 100P-50 CH
	89-327-143-080		TR, 2SC2714 (O) (0.1W)	C271	87-010-322-080		C-CAP, S 100P-50 CH
	87-A30-076-080		C-TR, 2SC3052F	C280	87-018-134-080		CAP, TC U 0.01-16 NY
	87-026-213-080		CHIP-TR, DTC114YK	C291	87-A11-080-080		CAP, 47P
	89-505-434-540		C-FET, 2SK543 (4/5)	C292	87-A11-080-080		CAP, 47P
	87-A30-086-070		C-TR, CSD1306E	C296	87-018-131-080		CAP, CER 1000P-50V
	87-A30-074-080		C-TR, RT1P 141C	C297	87-018-131-080		CAP, CER 1000P-50V
DIODE				C298	87-018-131-080		CAP, CER 1000P-50V
	87-070-178-090		DIODE, 1N5402-BD54	C299	87-018-131-080		CAP, CER 1000P-50V
	87-020-465-080		DIODE, 1SS133 (110MA)	C301	87-010-322-080		C-CAP, S 100P-50 CH
	87-017-126-080		ZENER, HZS11B3	C302	87-010-401-080		CAP, ELECT 1-50V
	87-A40-189-080		DIODE, 1SR139-400	C305	87-010-374-080		CAP, ELECT 47-10V
	87-A40-430-080		ZENER, HZS2C2	C307	87-010-405-080		CAP, ELECT 10-50V
	87-070-345-080		DIODE, IN4148	C308	87-010-248-080		CAP, ELECT 220-10V
	87-A40-270-080		C-DIODE, MC2838	C309	87-010-405-080		CAP, ELECT 10-50V
MAIN C.B				C310	87-010-322-080		C-CAP, S 100P-50 CH
C109	87-016-658-090		CAP, E 4700-35 SMG	C312	87-010-374-080		CAP, ELECT 47-10V
C110	87-010-388-080		CAP ELECT 1000-25V SME	C313	87-010-401-080		CAP, ELECT 1-50V
C111	87-010-196-080		CHIP CAPACITOR, 0.1-25	C315	87-010-426-080		C-CAP, S 0.012-25 B
C112	87-010-401-080		CAP, ELECT 1-50V	C318	87-010-426-080		C-CAP, S 0.012-25 B
C113	87-010-401-080		CAP, ELECT 1-50V	C319	87-A11-098-080		CAP, 270PF-50 CH
C114	87-010-101-080		CAP, ELECT 220-16	C320	87-010-197-080		CAP, CHIP 0.01 DM
C115	87-010-237-080		CAP, ELECT 1000-16V	C321	87-A11-114-080		CAP, TC U 1200P-50 J CH
C116	87-010-401-080		CAP, ELECT 1-50V	C322	87-010-754-080		CAP, E220-10 SRA 7L
C117	87-010-403-080		CAP, ELECT 3.3-50V	C324	87-010-186-080		CAP, CHIP 4700P
C118	87-010-385-080		CAP, ELECT 220-25V	C327	87-010-405-080		CAP, ELECT 10-50V
C119	87-010-196-080		CHIP CAPACITOR, 0.1-25	C328	87-010-405-080		CAP, ELECT 10-50V
C120	87-010-263-080		CAP, ELECT 100-10V	C329	87-010-178-080		CHIP CAP 1000P
C150	87-010-101-080		CAP, ELECT 220-16	C330	87-010-178-080		CHIP CAP 1000P
C199	87-018-134-080		CAP, TC U 0.01-16 NY	C331	87-010-178-080		CHIP CAP 1000P
C201	87-010-248-080		CAP, ELECT 220-10V	C332	87-010-263-080		CAP, ELECT 100-10V
C203	87-010-248-080		CAP, ELECT 220-10V	C334	87-010-401-080		CAP, ELECT 1-50V
				C335	87-010-260-080		CAP, ELECT 47-25V
				C340	87-018-131-080		CAP, CER 1000P-50V
				C341	87-010-197-080		CAP, CHIP 0.01 DM
				C701	87-010-381-080		CAP, ELECT 330-16V
				C702	87-010-404-080		CAP, ELECT 4.7-50V
				C703	87-012-286-080		CAP, U 0.01-25
				C704	87-012-286-080		CAP, U 0.01-25







# TRANSISTOR ILLUSTRATION

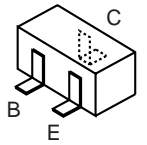
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C501	87-010-196-080		CHIP CAPACITOR, 0.1-25
C502	87-010-322-080		C-CAP, S 100P-50 CH
C503	87-010-322-080		C-CAP, S 100P-50 CH
C504	87-010-322-080		C-CAP, S 100P-50 CH
C505	87-010-322-080		C-CAP, S 100P-50 CH
C506	87-010-322-080		C-CAP, S 100P-50 CH
C510	87-016-669-080		C-CAP, S 0.1-25 K B
CN401	87-A60-424-010		CONN, 16P V TOC-B
CN403	87-A60-079-010		CONN, 08P H 9604S-08F
CN405	87-A60-060-010		CONN, 07P V 9604S-07C
CN406	87-A60-619-010		CONN, 2P V 2MM JMT
CNA402	8A-CJB-623-010		CONN ASSY, 6P CD MOTOR
FFC6	8A-CJB-622-010		FF-CABLE, 16P 1.0 120MM
L401	87-003-102-080		COIL, 100UH
L404	87-003-152-080		COIL, 100UH
SFR430	87-024-437-080		SFR100K, RH063EC
X401	87-A70-046-010		VIB, XTAL 16.934MHZ



E C B  
2SA952  
2SA1296  
2SA1318  
2SC2001  
2SD655  
KTC3198



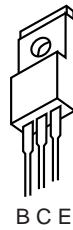
E C B  
2SA933AS  
DTC114YS  
DTC124XS



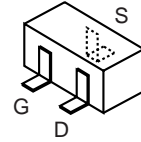
B E C  
2SC2714  
2SC3052  
CSD1306E  
DTC114TK  
DTC114YK  
DTC124XK  
DTC144EK  
RN1410  
RT1P141C  
RT1P144C

## PT C.B

C1	87-010-198-080		CAP, CHIP 0.022
C2	87-010-198-080		CAP, CHIP 0.022
C3	87-010-198-080		CAP, CHIP 0.022
C4	87-010-198-080		CAP, CHIP 0.022
C5	87-010-198-080		CAP, CHIP 0.022
C6	87-010-198-080		CAP, CHIP 0.022
C7	87-010-198-080		CAP, CHIP 0.022
C8	87-010-198-080		CAP, CHIP 0.022
C9	87-010-389-010		CAP, ELECT 2200-25 SME
C10	87-016-051-090		CAP, E 2200-35 SMG



B C E  
2SB1370



S G D  
2SK543

CNA1	8A-CJB-624-010		CONN ASSY, 5P POWER
△ F1	87-035-191-010		FUSE, 3.15AT 250V T218
△ F2	87-035-191-010		FUSE, 3.15AT 250V T218
△ FC1	87-033-213-080		CLAMP, FUSE
△ FC2	87-033-213-080		CLAMP, FUSE
△ FC3	87-033-213-080		CLAMP, FUSE
△ FC4	87-033-213-080		CLAMP, FUSE
△ L1	87-A91-453-010		PLH10A7003
△ PT1	8A-CJB-608-010		PT, ACJ-11 EZ
△ T1	87-A60-317-010		TERMINAL, 1P MSC
△ T2	87-A60-317-010		TERMINAL, 1P MSC

## CD MOTOR C.B

M2	9X-262-576-910		MOTOR GEAR ASSY
PIN3	91-564-722-110		CONNECTOR 6P
SW1	91-572-085-120		LEAF SW

## チップ抵抗部品コード/CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

### Chip Resistor Part Coding

8 8 - □ □ □ □ □ □

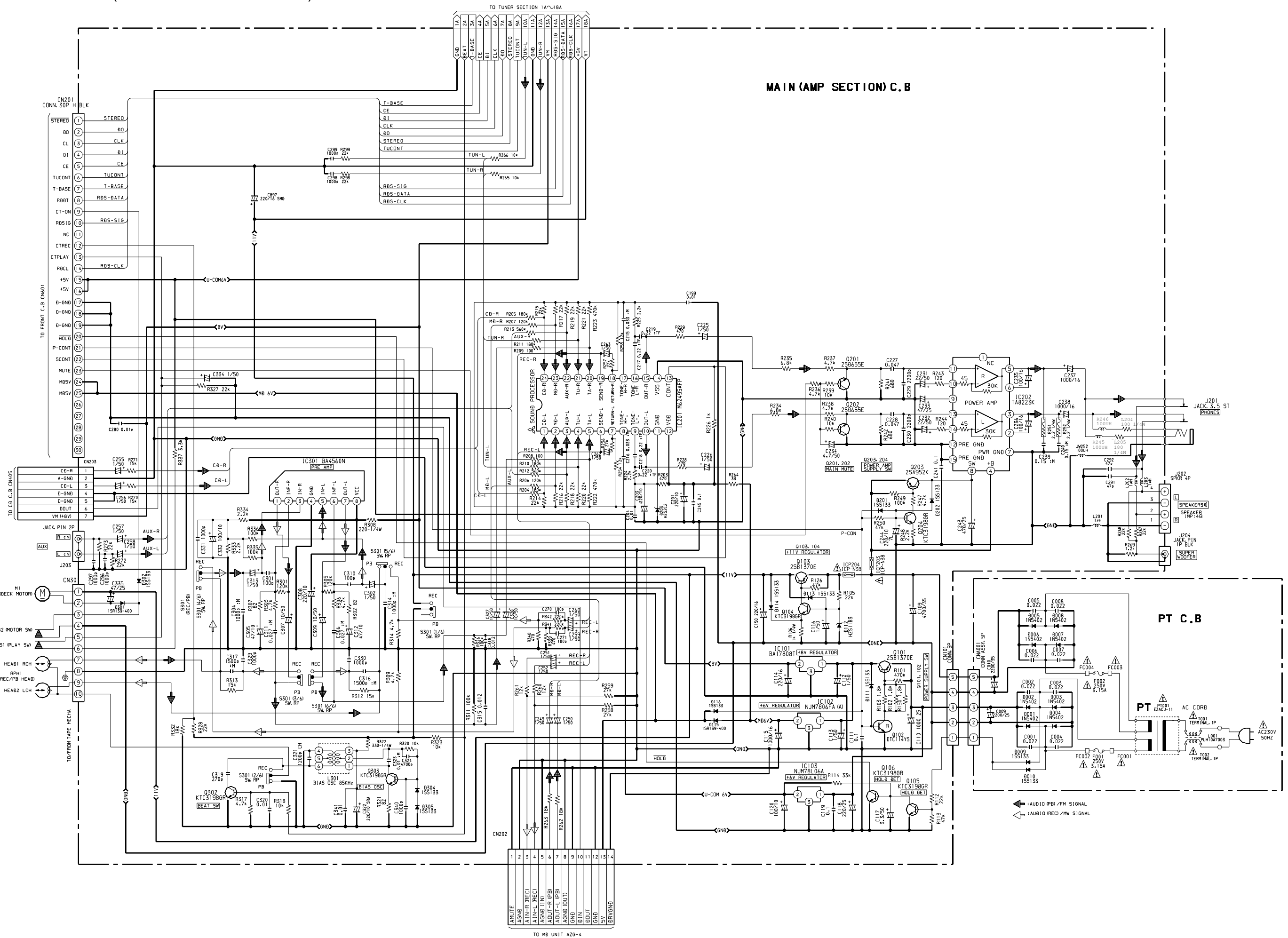
A  
抵抗部品コード  
Resistor Code

桁表示  
Figure  
抵抗値  
Value of resistor

## チップ抵抗 Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法/Dimensions (mm)			抵抗コード : A Resistor Code : A	
				外形/Form	L	W		t
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

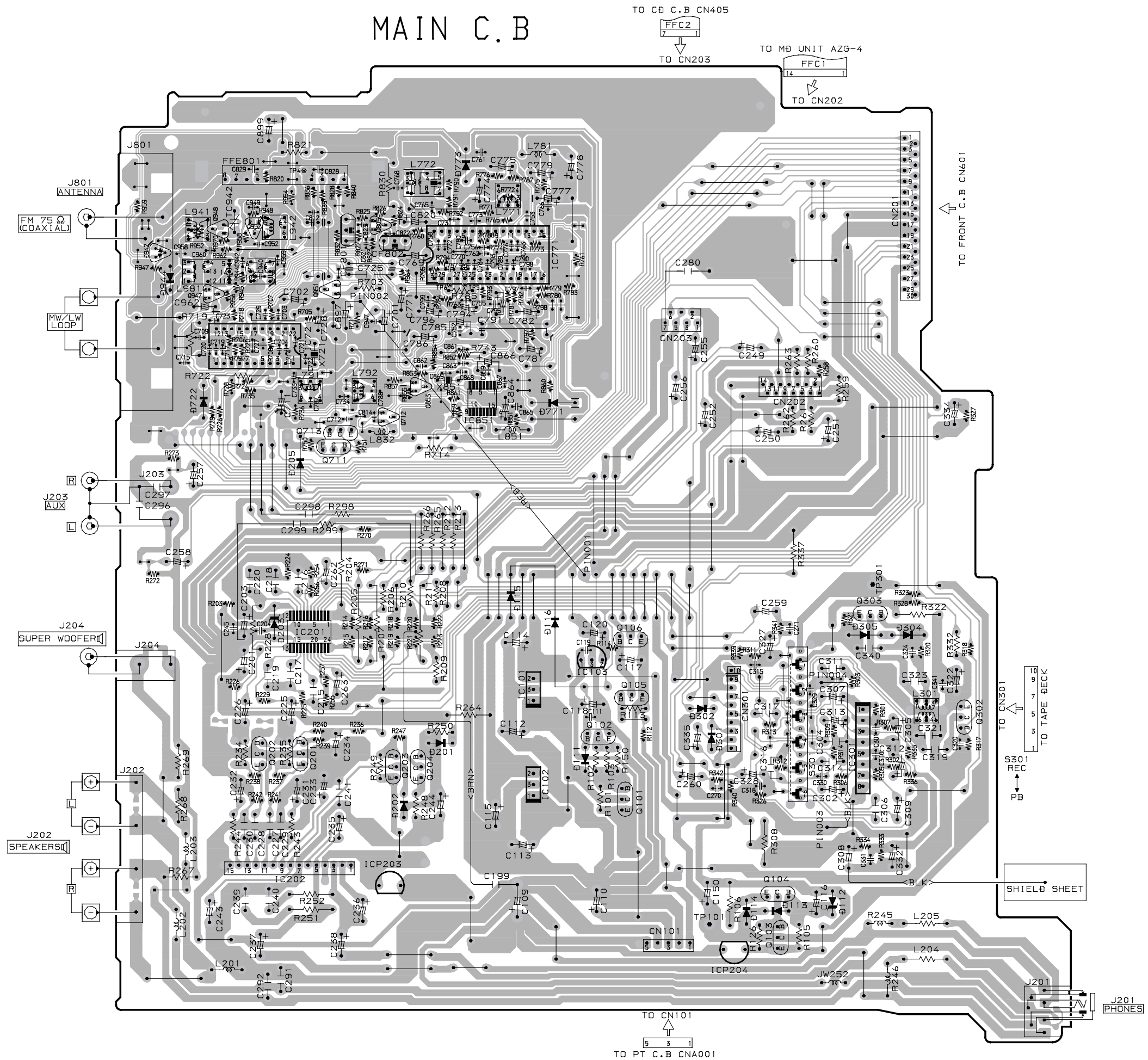
SCHEMATIC DIAGRAM - 1 (MAIN<AMP SECTION> / PT)



WIRING - 1 (MAIN)

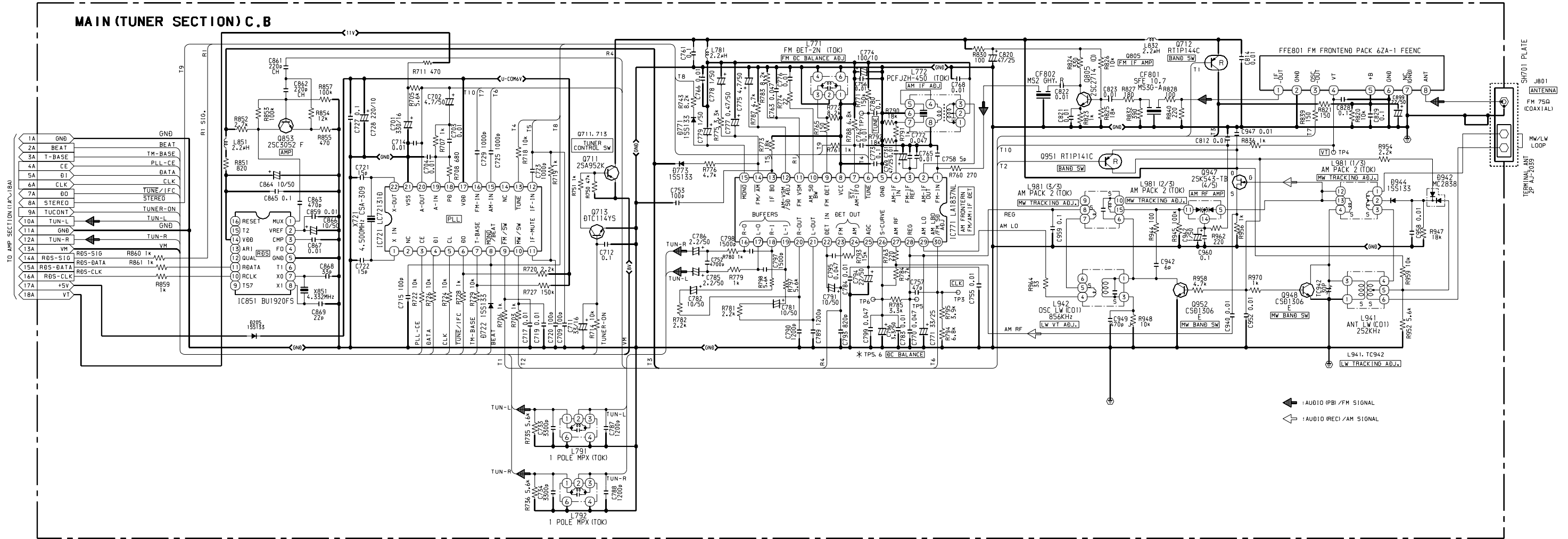
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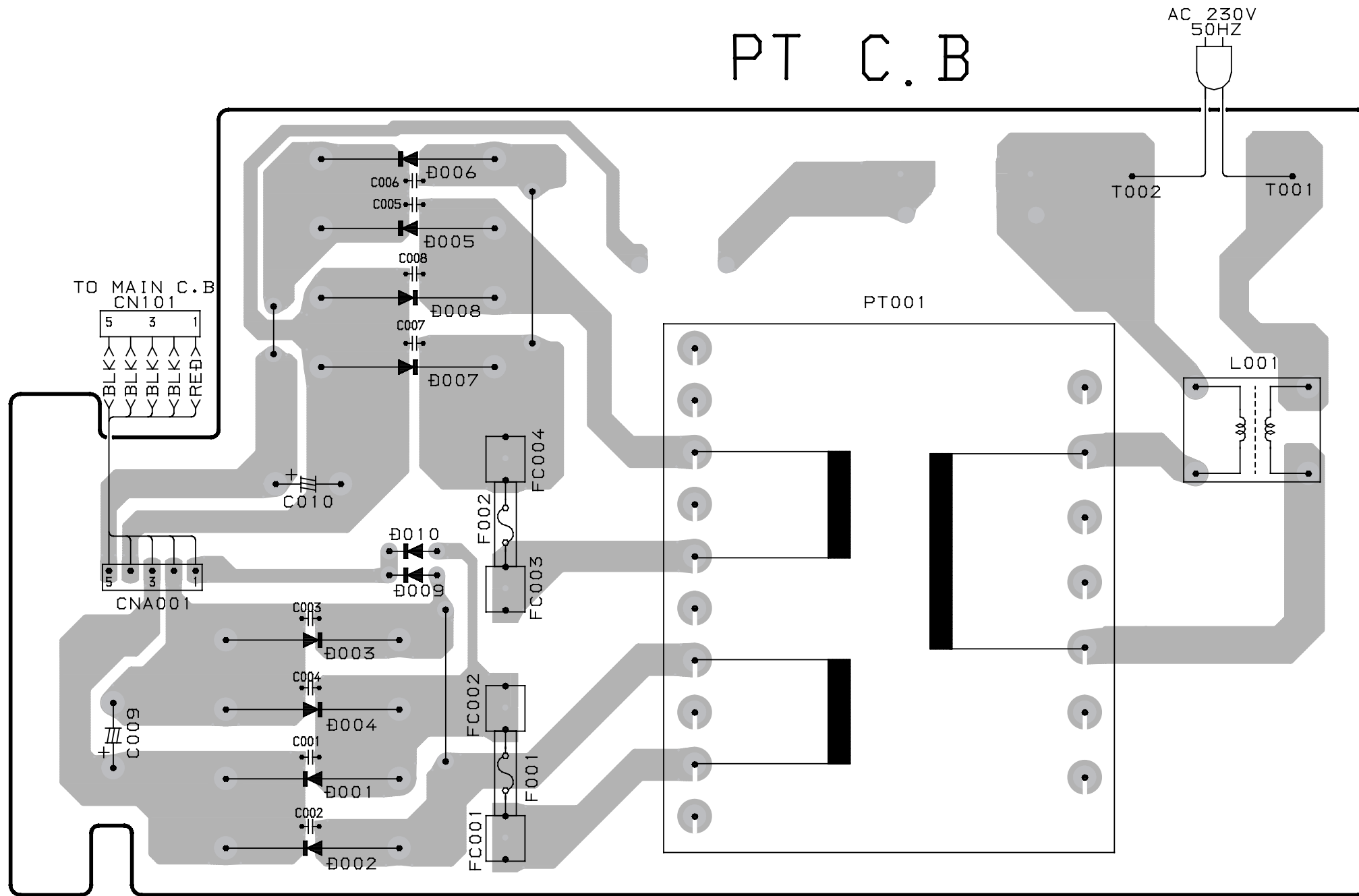
MAIN C.B



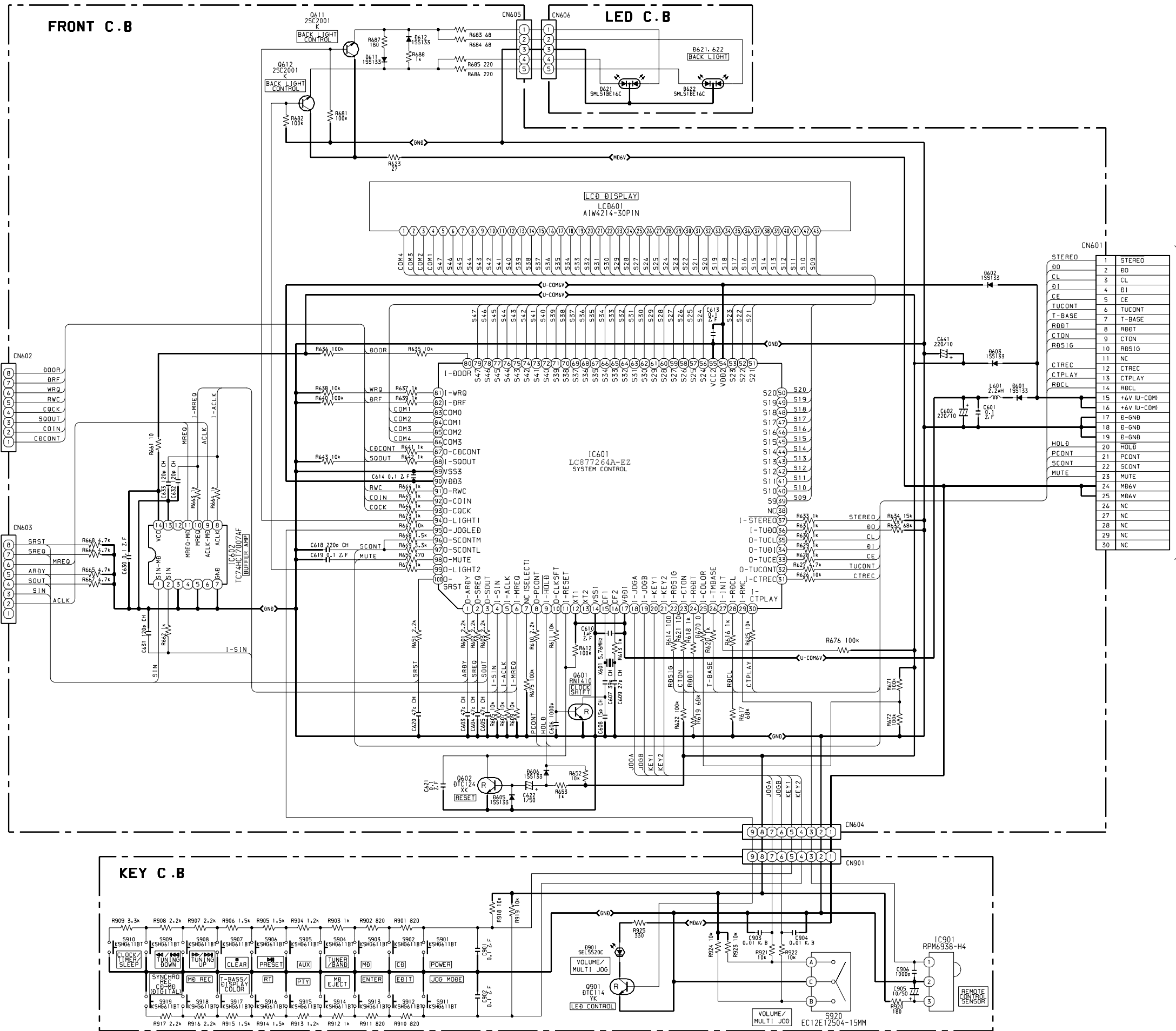
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T  
U

SCHEMATIC DIAGRAM – 2 (MAIN<TUNER SECTION>)





SCHEMATIC DIAGRAM – 3 (FRONT / KEY / LED)



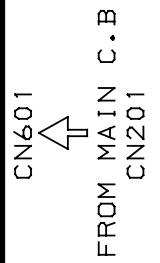
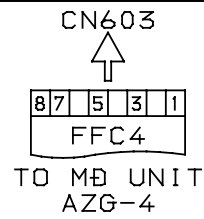
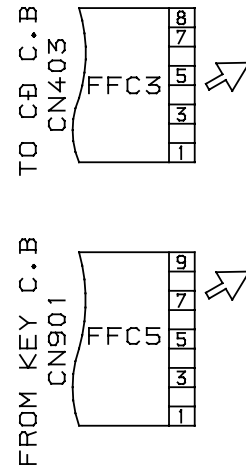
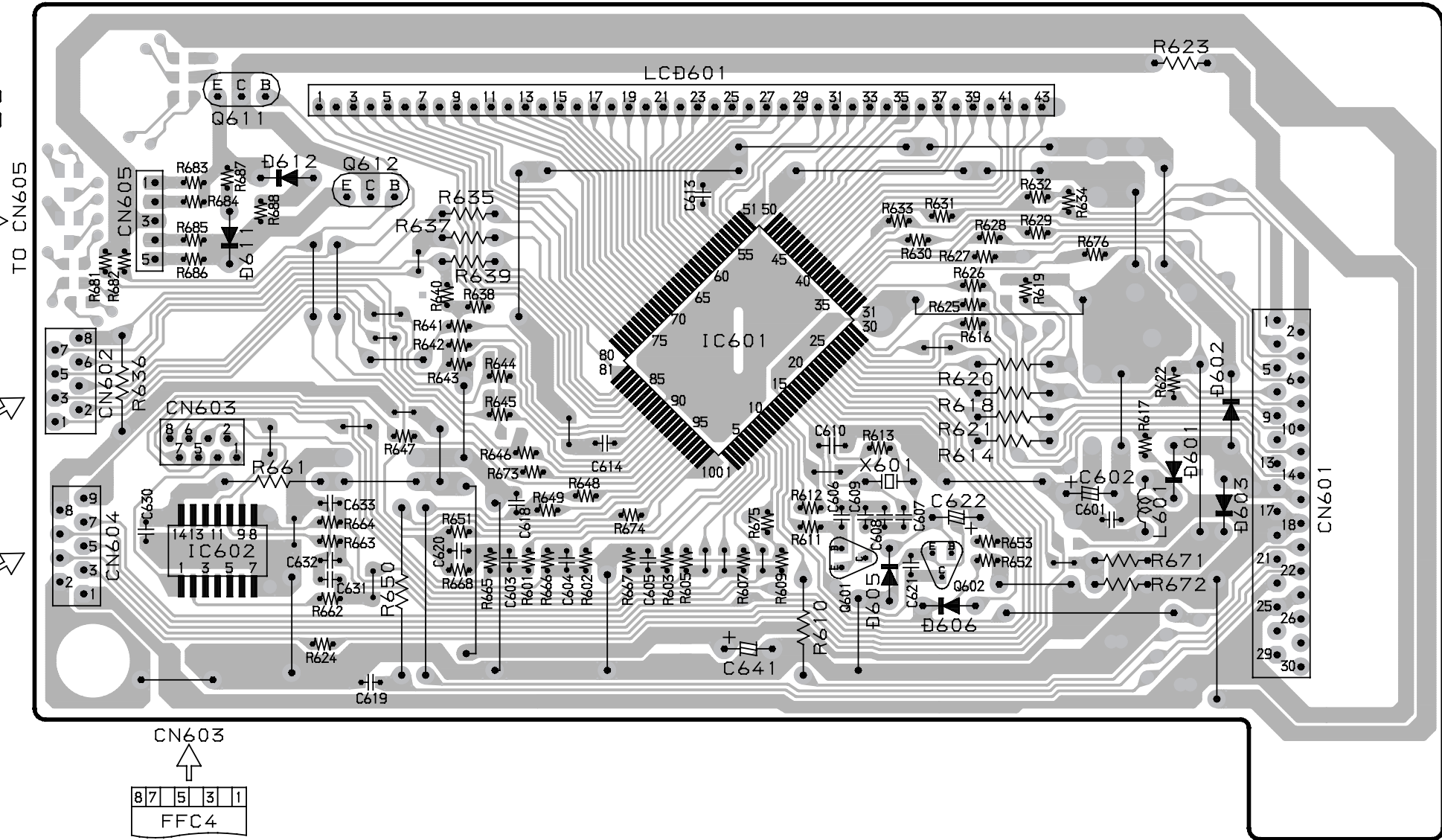
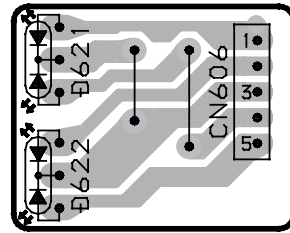


# FRONT C. B

LCD601  
LCD DISPLAY

## LED C. B

D621, 622  
BACK LIGHT

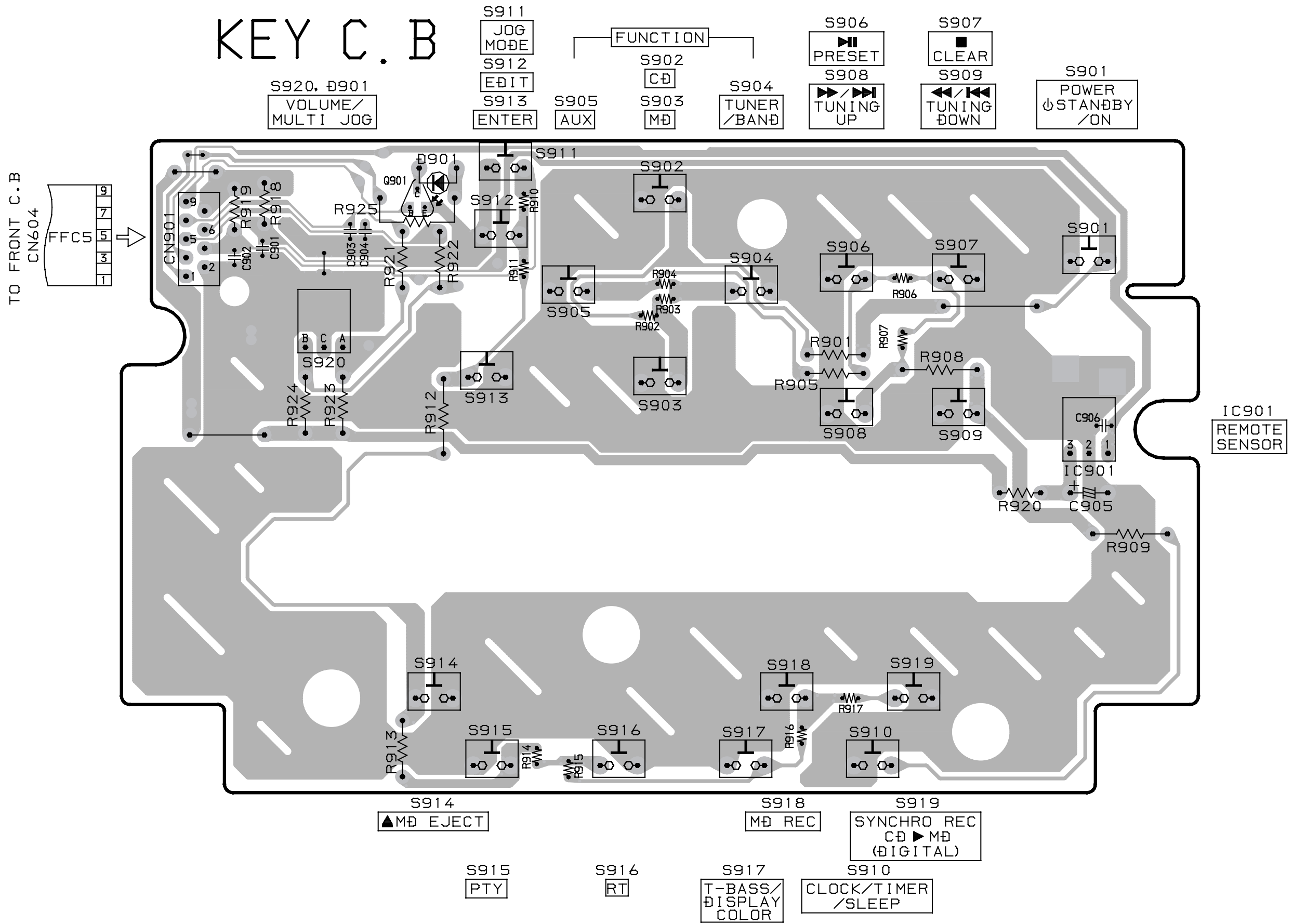


WIRING-4 (KEY)

30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

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# KEY C.B

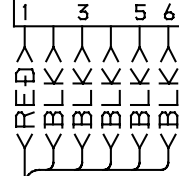




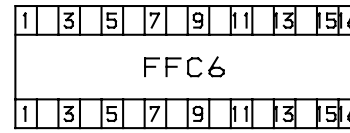
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CD C.B

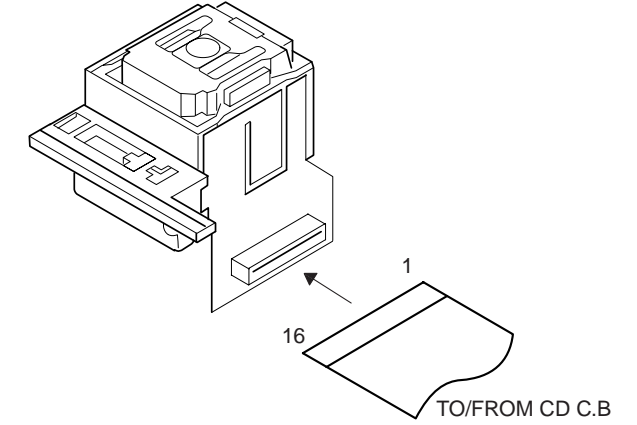
TO CD MOTOR



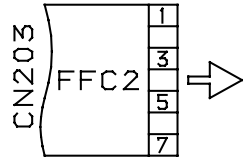
TO PICK UP ASSY  
SF-PIO1NR



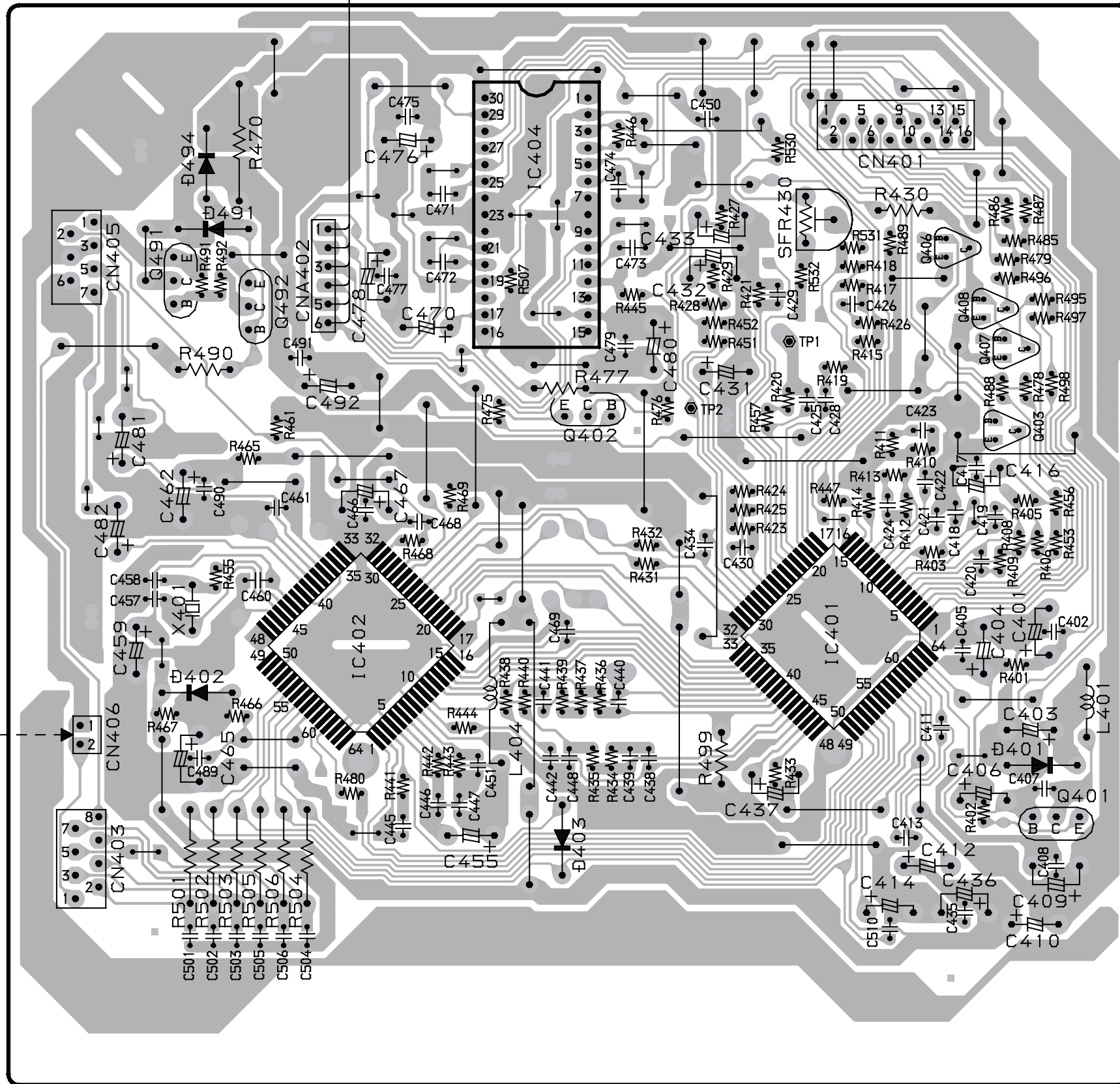
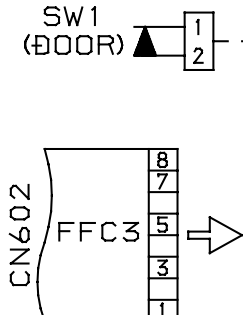
PICK UP ASSY  
SF-P101NR



TO MAIN C.B

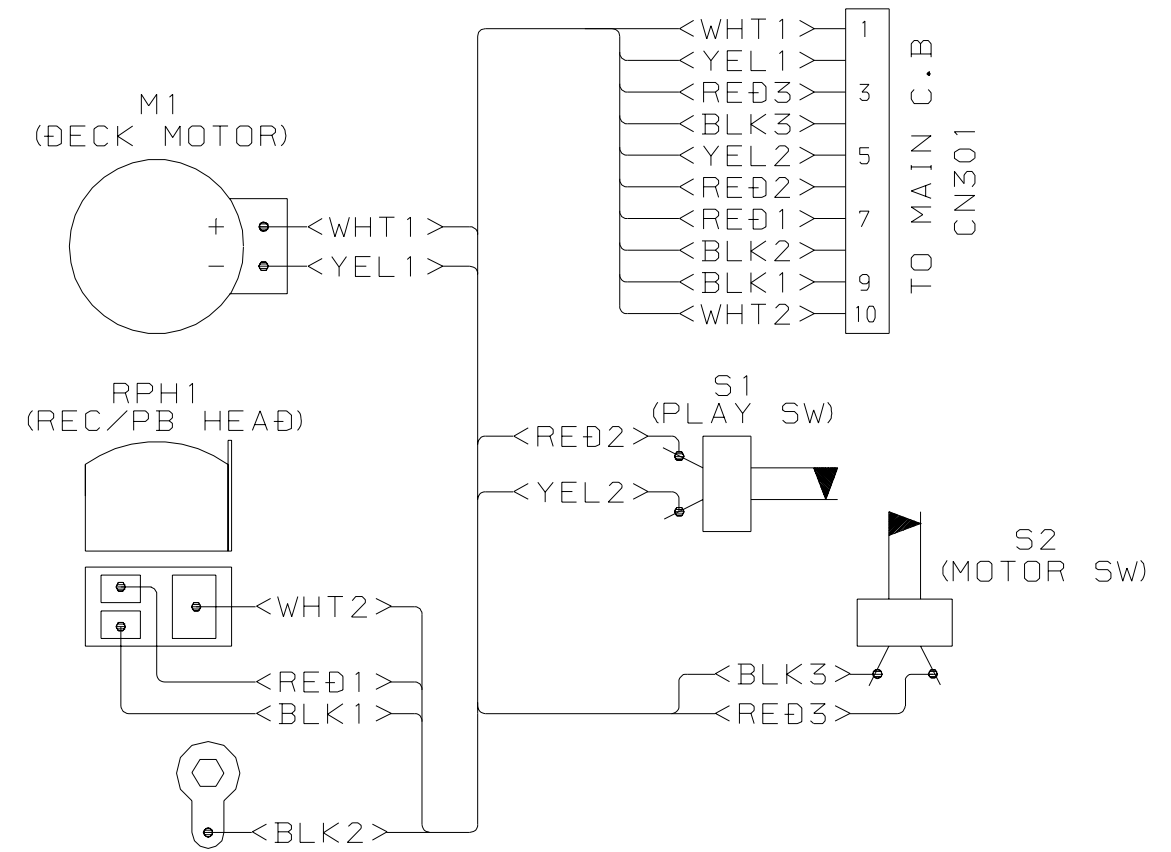
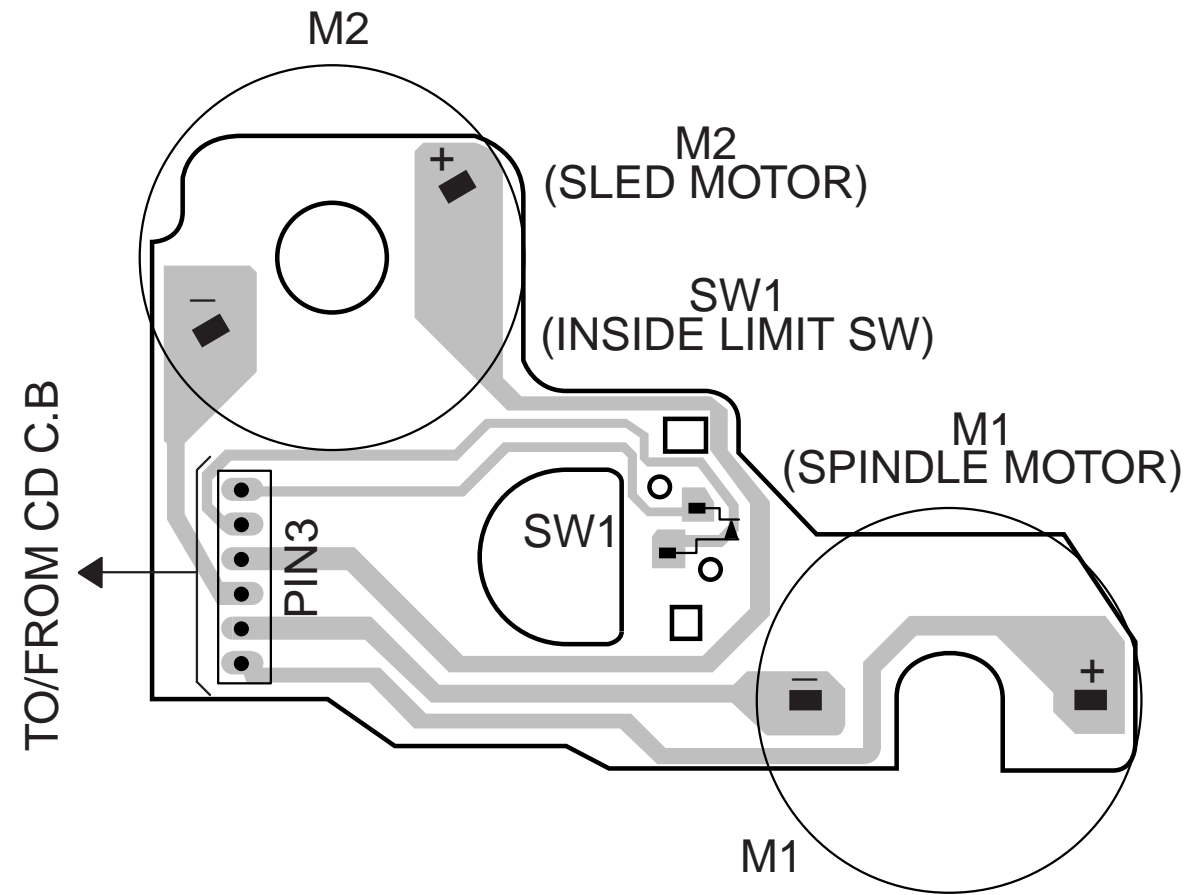


FROM FRONT C.B

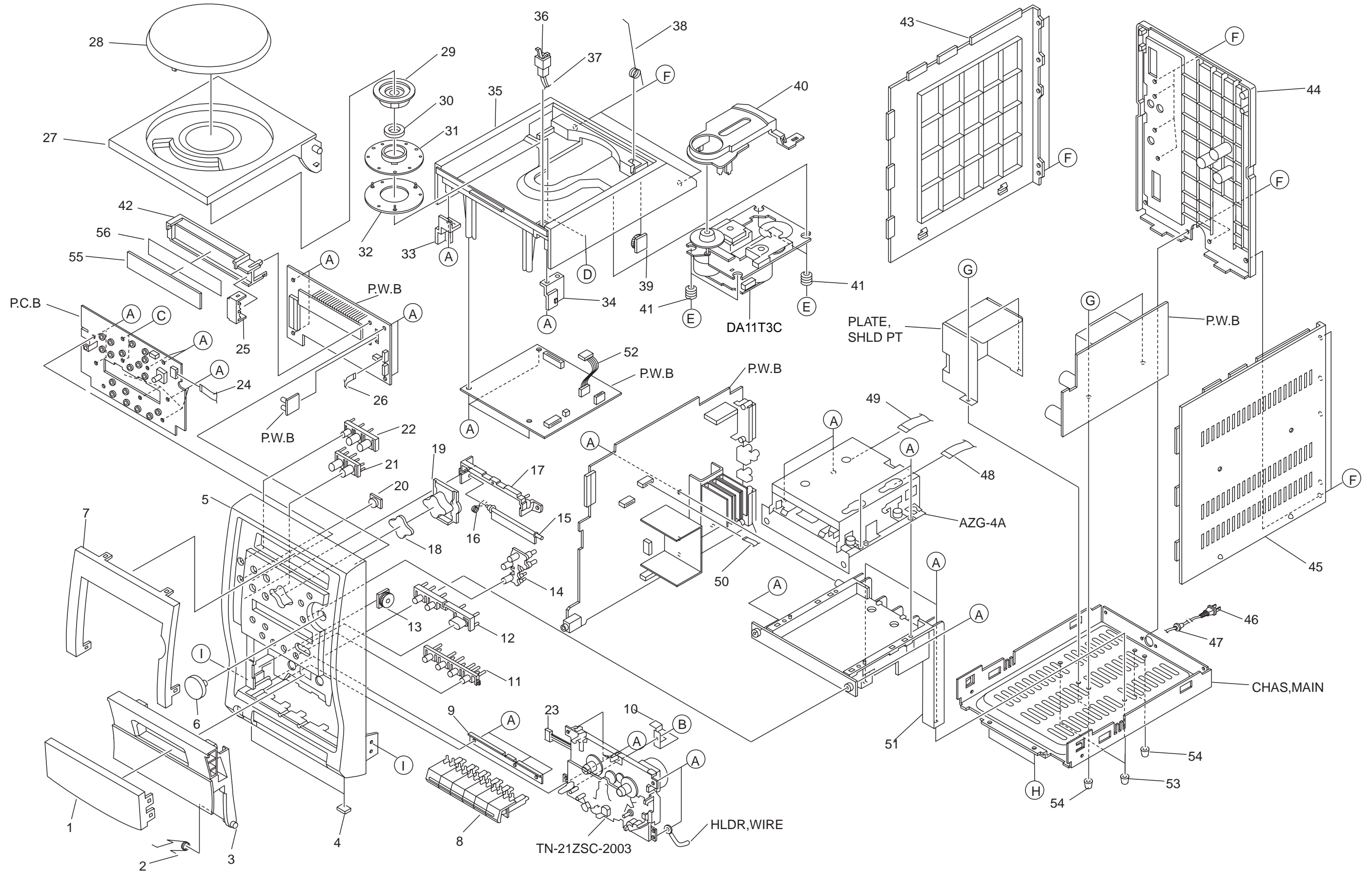


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# CD MOTOR C.B



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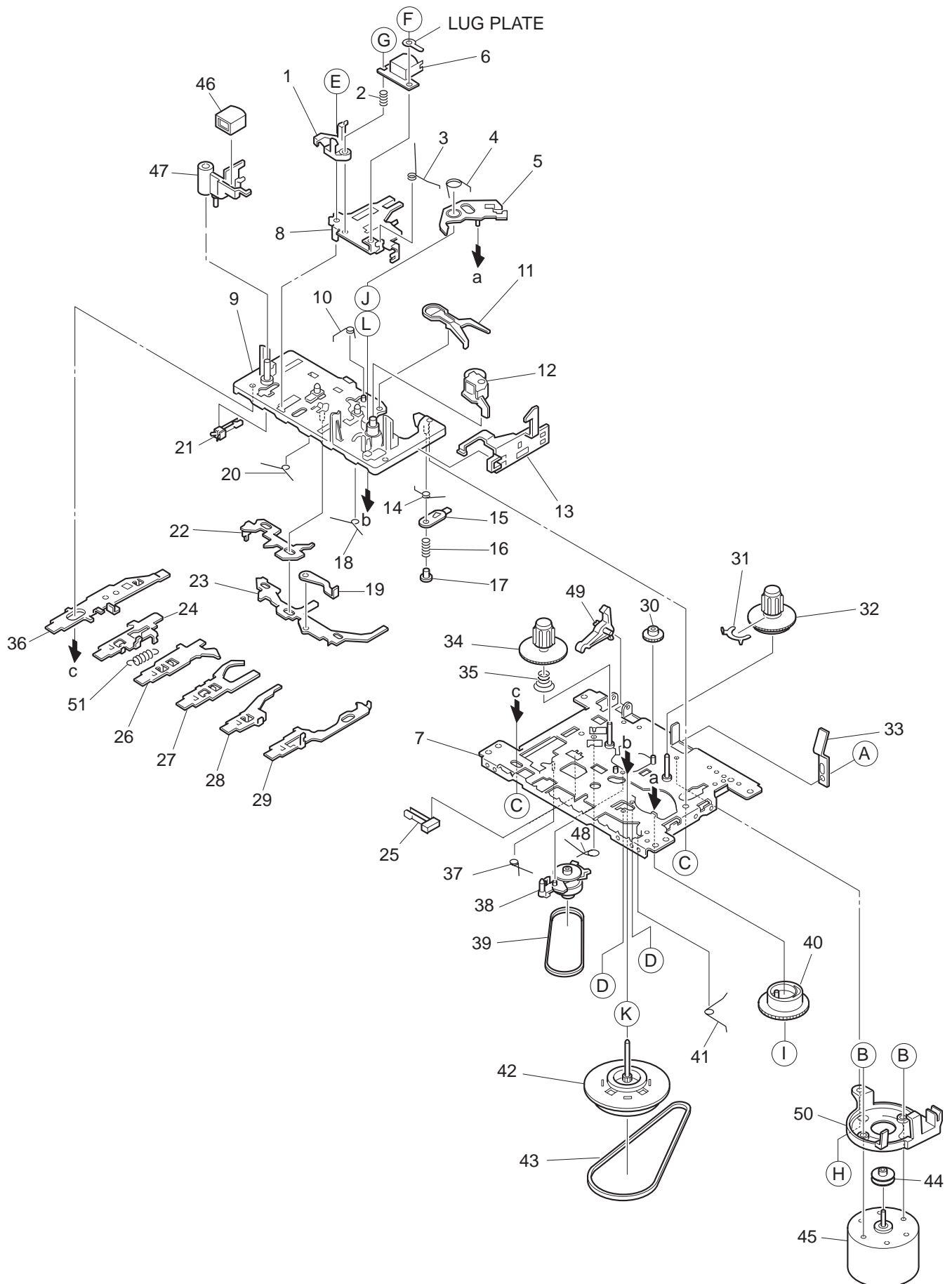
# MECHANICAL PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-CJB-044-010		WINDOW, CASS (S)	36	87-036-389-010		SW, PUSH LOCK
2	82-NF7-218-010		SPR-T, CASS	37	8A-CJB-626-010		CONN ASSY, 2P CD DOOR
3	8A-CJB-054-010		LID, CASS (S)	38	8A-CJB-211-010		SPR-T, CD
4	8A-CJB-061-010		CUSH, FOOT MAIN	39	87-NF8-220-010		DMPR, 150
5	8A-CJB-057-010		CABT, FR EZ (S)	40	8Z-CDB-169-010		PANEL, CD SANYO
6	8A-CJB-020-010		KNOB, RTRY JOG	41	88-CH6-220-010		CUSHION, CD A
7	8A-CJB-065-010		WINDOW, DISP (S) RDS	42	8A-CJB-208-010		GUIDE, LCD
8	8A-CJB-019-010		KEY, CASS	43	8A-CJB-003-010		PANEL, L
9	8A-CJB-207-010		HLDR, KEY CASS	44	8A-CJB-028-010		PANEL, REAR EZ
10	8A-CJB-212-010		SPR-P, REC	45	8A-CJB-004-010		PANEL, R
11	8A-CJB-018-010		KEY, TIMER	△ 46	87-A80-092-010		AC CORD ASSY, E BLK SUN FAI
12	8A-CJB-016-010		KEY, REC	47	87-085-185-010		BUSHING, AC CORD (E)
13	86-NFZ-231-010		DMPR, 70	48	8A-CJB-620-010		FF-CABLE, 8P 1.0 250MM
14	8A-CJB-017-010		KEY, EDIT	49	8A-CJB-621-010		FF-CABLE, 14P 1.0 250MM
15	8A-CJB-041-010		LID, MD (S)	50	88-907-211-110		FF-CABLE, 7P 1.25 210MM
16	8Z-CK3-221-010		SPR-T, FLAP	51	8A-CJB-202-010		CHAS, MD
17	8A-CJB-203-010		HLDR, LID MD	52	8A-CJB-622-010		FF-CABLE, 16P 1.0 150MM
18	8A-CJB-047-010		COVER, KEY FUNC (S)	53	8Z-NB8-254-010		COVER, PL M3
19	8A-CJB-015-010		KEY, FUNC	54	8Z-NB8-240-010		COVER, PL
20	8A-CJB-012-010		WINDOW, RC	55	8A-CJB-218-010		PLATE, REFLECTOR
21	8A-CJB-014-010		KEY, FF	56	8A-CJB-209-010		GUIDE, LED
22	8A-CJB-013-010		KEY, POWER	A	87-067-703-010		TAPPING SCREW, BVT2+3-10
23	8A-CJB-625-010		CONN ASSY, 10P DECK	B	87-571-032-410		VIT+2-3
24	88-909-121-110		FF-CABLE, 9P 12CM	C	87-067-684-010		BVT2+2.6-6 W/O SLOT
25	8A-CJB-210-010		COVER, LED	D	87-253-033-110		SCREW, U+2-4
26	88-908-101-110		FF-CABLE, 8P 1.25 10MM	E	8Z-CK5-222-010		S-SCREW, CD+2.6-6 F9
27	8A-CJB-052-010		LID, CD (S)	F	87-B10-230-010		BVT2+3-10 W/O SLOT SILVER
28	8A-CJB-042-010		WINDOW, CD (S)	G	87-067-586-010		BVTT+4-8
29	84-CT5-209-010		PLATE, MAGNET	H	87-067-584-010		BXT2+3-6 W/O SLOT
30	87-036-368-010		MAGNET	I	87-723-095-410		QT2+3-8 W/O SLOT BLK
31	8Z-CDB-170-010		BASE, CHUCK				
32	88-CD9-211-210		RING, CHUCK				
33	8A-CJB-205-010		HLDR, CHAS CD L				
34	8A-CJB-206-010		HLDR, CHAS CD R				
35	8A-CJB-005-010		CHAS, CD				

## COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange	GM	Metallic Green
YM	Metallic Yellow	DM	Metallic Orange		

TAPE MECHANISM EXPLODED VIEW 1 / 1

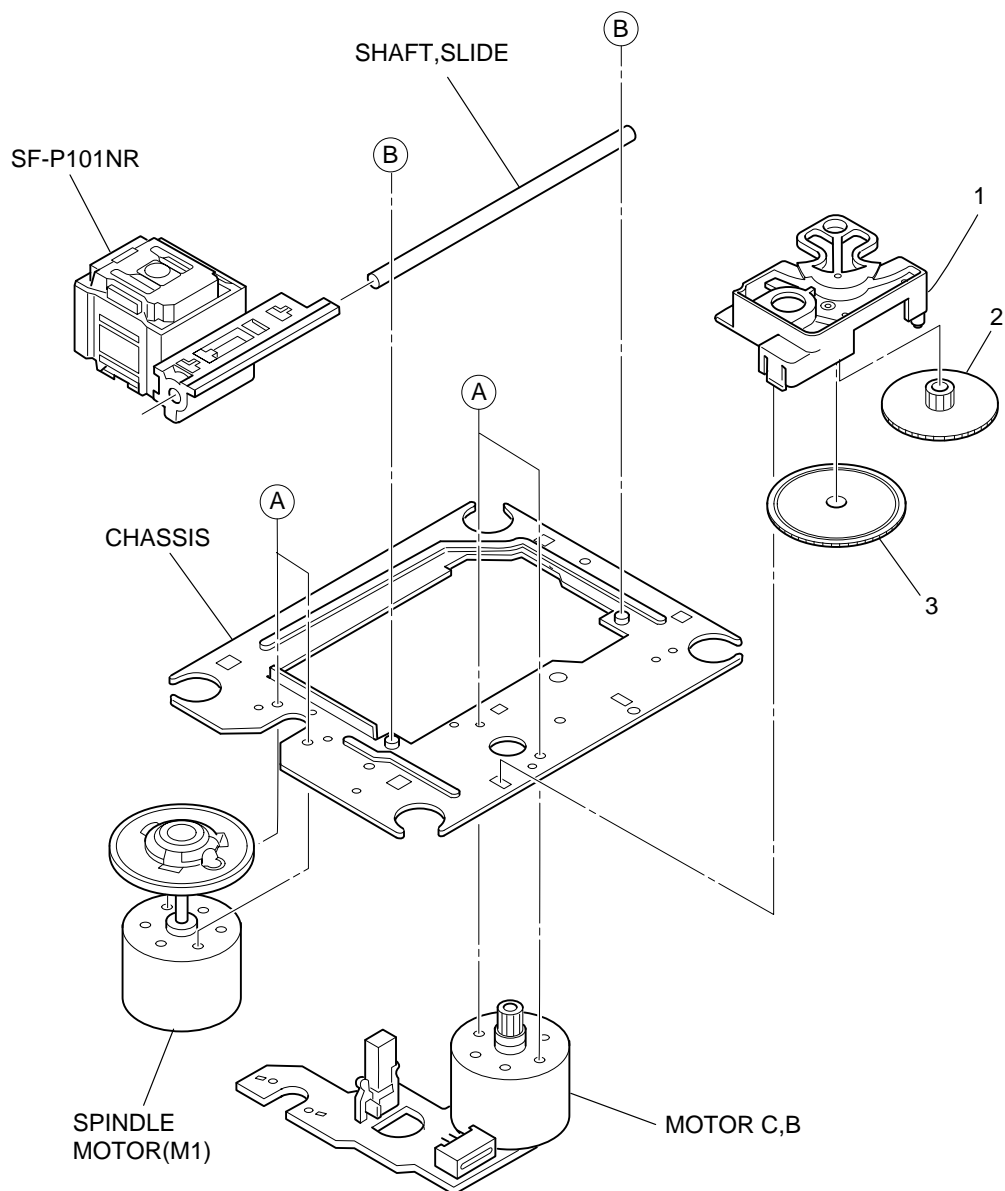




# TAPE MECHANISM PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	S1-921-030-4A0		HEAD BASE	36	S1-921-140-220		REC BUTTON LEVER
2	S1-821-030-070		AZIMUTH SPRING	37	S1-921-140-170		P.S.LEVER SPRING
3	S1-921-030-090		PANEL P SPRING	38	S1-921-073-040		RF CLUTCH ASSY
4	S1-921-260-050		GEAR PLATE SPRING	39	S1-921-070-030		RF BELT
5	S1-921-265-020		GEAR PLATE ASSY	40	S1-921-260-020		CAM GEAR
6	S6-201-011-110		HEAD,RP7442ES-0951	41	S1-921-140-160		E ACTUATOR SPRING
7	S1-921-015-010		CHASSIS ASSY	42	S1-921-093-210		FLYWHEEL ASSY
8	S1-921-030-110		HEAD PANEL	43	S1-921-090-380		MAIN BELT
9	S1-921-143-160		BASE ASSY	44	S1-921-120-590		MOTOR PULLEY
10	S1-921-141-8A0		M CONTROL SPRING	45	S6-002-030-220		MOTOR EG530AD-2B
11	S1-921-260-4A0		SENSING LEVER	46	S6-209-100-100		E HEAD PH-K380-MS1
12	S1-921-043-100		PINCH ROLLER ARM ASSY	47	S1-921-030-050		MG ARM
13	S1-921-130-020		EJECT SLIDE LEVER	48	S1-921-140-210		REC BUTTON LEVER SPRING
14	S1-921-141-3A0		P CONTROL SPRING	49	S1-821-100-690		RECORD SAFETY LEVER
15	S1-921-140-550		PAUSE LEVER(E)	50	S1-821-128-9A0		MOTOR BRACKET
16	S1-921-140-120		PAUSE LEVER SPRING	51	S1-821-010-500		PLAY BUTTON LEVER SPRING
17	S1-921-140-110		PAUSE STOPPER	A	S9-P04-200-310		C TAPPING SCREW 2-3
18	S1-921-140-150		BUTTON LEVER SPRING(B)	B	S1-921-120-020		MOTOR COLLER SCREW
19	S1-821-011-590		E KICK LEVER	C	S9-B10-200-510		P TAPPING BIND SCREW M2-5
20	S1-921-141-070		BUTTON LEVER SPRING(A)	D	S9-C07-204-510		SCREW, TAPPING (CAMERA)M2-4.5
21	S6-401-011-490		LEAF SW MSW-1541T	E	S9-P01-200-610		SCREW, M2-6
22	S1-921-140-090		SWITCH ACTUATOR	F	S9-B01-200-310		(+)BIND SCREW M2-3
23	S1-921-140-080		PUSH BUTTON ACTUATOR	G	S9-F08-200-710		AZIMUTH SCREW M2-7
24	S1-921-140-230		PLAY BUTTON LEVER	H	S1-921-120-030		MB SCREW
25	S6-401-011-610		LEAF SW MSW-17820MVEI	I	S9-W02-300-100		P WASHER CUT 1.2-3.8-0.3
26	S1-921-140-240		REW BUTTON LEVER	J	S9-W02-500-100		P WASHER CUT 1.45-3.8-0.5
27	S1-921-140-250		FF BUTTON LEVER	K	S9-W01-400-100		P WASHER 2-3.5-0.4
28	S1-921-140-260		STOP BUTTON LEVER	L	S9-W01-130-200		P WASHER 2.1-4-0.13
29	S1-921-140-610		PAUSE BUTTON LEVER				
30	S1-821-100-700		FF GEAR				
31	S1-921-050-060		SENER				
32	S1-921-053-100		TAKE UP REEL ASSY				
33	S1-829-100-010		PACK SPRING				
34	S1-921-050-150		S REEL HUB				
35	S1-921-050-220		BACK TENSION SPRING				

# CD MECHANISM EXPLODED VIEW 1 / 1



# CD MECHANISM PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	S2-121-A28-400		COVER GEAR
2	S2-511-A21-000		GEAR MIDDLE
3	S2-511-A21-100		GEAR, DRIVE
A	S1-PN2-03R-OSE		SCR PAN PCS 2-3
B	87-261-073-410		SCR S-TPG FLT 2.6-6
ALL	M8-ZZK-E90-070		DA11T3C

# SPEAKER PARTS LIST (SX-MD210)

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-CJB-954-010		PANEL ASSY, SPKR(S)
2	8A-CJB-021-110		CABI, SPKR FR
3	87-067-703-010		BVT2+3-10 W/O SLOT
4	87-067-698-010		BVT2+3-18 W/O SLOT
5	8A-CJB-627-010		CORD, SPKR
6	8A-CJB-027-010		CUSH, FOOT
7	8A-CJB-220-110		HLDL, SPKR REAR
8	8A-CJB-204-110		HLDL, SPKR WIRE
9	8A-CJB-632-010		SPKR, 100MM 40HM

## TEST MODE

### CD TEST MODE

#### 1-1 How to activate CD Test Mode

Insert the AC plug while pressing the "CD function" button.  
Test mode will be activated and 「CD TEST」 will be appeared in the LCD display.

Note: Test mode can not be activated when CD door switch is opened.

#### 1-2 CD Test Mode Functions

Mode	Function	Display	Operation	Content
Start Mode	Activate CD Test Mode	CD TEST		
Search Mode	■	SEARCH	Continuous Focus Search (Pickup lens repeat full swing) * Note 1	<ul style="list-style-type: none"> <li>• APC circuit check</li> <li>• Laser current measurement</li> <li>• Focus error waveform check</li> </ul>
Play Mode	▶▶	PLAY	<ul style="list-style-type: none"> <li>• Normal Playback</li> <li>• When TOC READ is unavailable, continuous Focus Search (Same as Search Mode Operation)</li> </ul>	<ul style="list-style-type: none"> <li>• Focus servo</li> <li>• Tracking servo</li> <li>• CLV servo</li> <li>• Sled servo</li> </ul>
Traverse Mode	Tuner Function Button	TRAVERS	Playback pause status	Tracking servo OFF
Sled Mode	▶▶ ◀◀	SLED IN SLED OUT	<ul style="list-style-type: none"> <li>• Shift to the internal circumference of pickup</li> <li>• Shift to the external circumference of pickup</li> </ul>	<ul style="list-style-type: none"> <li>• Sled servo</li> <li>• Mecha operation check</li> </ul>

\* Note 1: There are cases when CD cannot be operated owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In this case, the power supply should be switched off for ten minutes until heat has been reduced and then re-start.

#### 1-3 How to cancel CD Test Mode

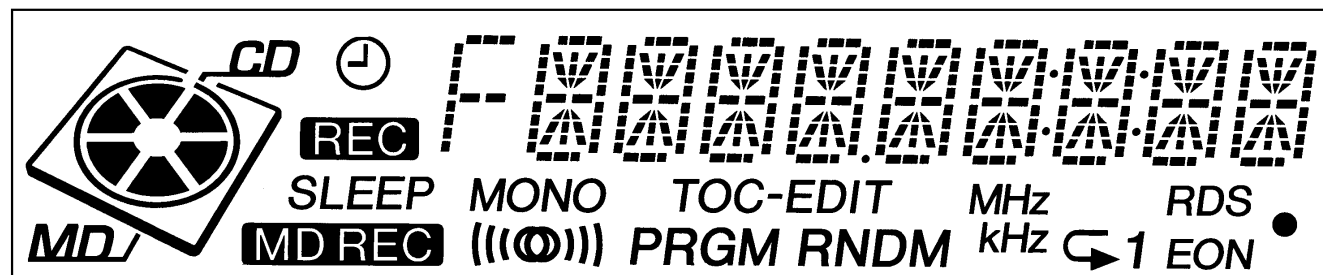
Either one of the following operations will cancel the CD test mode.

- Open the CD door switch.
- Press "POWER" button.
- Disconnect the AC plug.

## LCD TEST MODE

#### 1-1 How to activate LCD Test Mode

Insert the AC plug while pressing the "DISPLAY" button.  
LCD display is fully illuminated and then all segments are lit on and off every one second.



#### 1-2 How to cancel LCD Test Mode

LCD test mode will cancel by press "POWER" button or disconnect the plug.

## MD TEST MODE

### 1-1 How to start up MD Test Mode

Insert the AC plug while pressing the "MD function" button.

After the MD test mode has started up, [MD TEST] message appears and the test mode becomes operatable.

Note: • Disconnect the AC plug immediately if any mechanism abnormalities.  
• Playback and recording are not possible during the test mode.

### 1-2 How to cancel MD Test Mode

1) Press the "MD EJECT" button and remove the disc.

2) Disconnect the AC plug or press "POWER" button.

### 1-3 Operation Check Mode

1) Checks after the test mode has started up.

The following playback audio circuits can be checked.

- Enable circuit to check ----- DAC, LINEAMP, HEADPHONE AMP
- Output level ----- 1KHz, -24dB

2) Switch status check

ON/OFF statuses of main unit and mechanism switches can be checked on display.

Switch name	Switch state	Indication on Display	Usalde disc
REC PROTECT	When the write-protection tab of disc is stopped.	TOC – EDIT	Record/playback disc
REFRECT	When the high reflection disc (CD) is used.	MD REC	Playback only disc
INNER	When the pickup is the positioned at the innermost track (when the LIMIT SW is ON).	MONO	_____

### 1-4 How to switch to Servo Standby Mode

When the test mode has been established, the mode changes to the servo standby mode by pressing "■" button (Indication on display : ALL SVOFF).

The various check modes can be entered from this mode.

Pressing the "■" button during each operation returns to [ALL SVOFF].

### 1-5 Checking Sled Operation

1) When "▶▶" button is pressed in the [ALL SVOFF] state, pickup moves in the outer direction. [T SLEDFWD] is displayed.

2) When "▶▶" button is pressed in the [ALL SVOFF] state, pickup moves in the inner direction. [T SLEDRVS] is displayed.

### 1-6 Checking Laser Power

1) The laser power is switched each time the "EDIT" button is pressed in the "ALL SVOFF" state. Laser power output is changed as OFF→LASER READ→LASER 1/2→LASER WRITE→OFF order and indication on the display is follows;

Mode	Indication on display
OFF	ALL SVOFF
LASER READ	LA READ
LASER 1/2 WRITE	LA 1/2
LASER WRITE	LA WRITE

2) Press "■" button to return the display to [ALL SVOFF] after checking.

### 1-7 Checking OWH (Over Write Head) Operation

The operation of OWH can be checked by pressing following buttons in the loading status.

"MD EJECT" button-----OWH UP

"SYNCHRO REC" button-----OWH DOWN

\* Note: Do not down OWH when using the high reflection disc (CD).

### 1-8 Checking Servo Operation

• Checking the focus search and spindle kick 1

1) When "▶||" button is pressed in the [ALL SVOFF] state without disc, focus search and spindle kick are executed continuously. [FOCUS SCH] is displayed.

2) Press "■" button to display 「ALL SVOFF」 after checking

• Checking the focus search and spindle kick 2

1) When "TUNER function" button is pressed in the "ALL SVOFF" state regardless disc existence, focus search and spindle kick are executed continuously. 「FOCUS CHK」 is displayed and S curve can be checked if disc is loaded.

2) Press "■" button to display 「ALL SVOFF」 after checking.

• Checking Focus Servo

1) Insert a test disc.

2) Move pickup to center track by pressing "▶▶" or "◀◀" buttons.

3) Press "JOG MODE" button to set the servo mode according to the inserted disc as follows;

• MO disc (MO)-----Indication on display 「SEL GRV」.

• PIT disc (CD)-----Indication on display 「SEL PIT」.

4) Press "▶||" button.

If focus servo is operating normally, the message 「FOCUS ON」 is displayed after 「FOCUS SCH」.

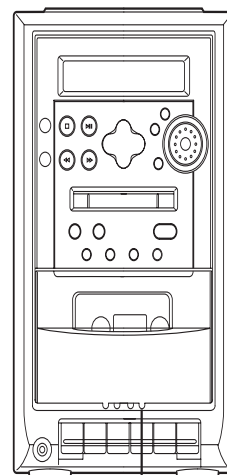
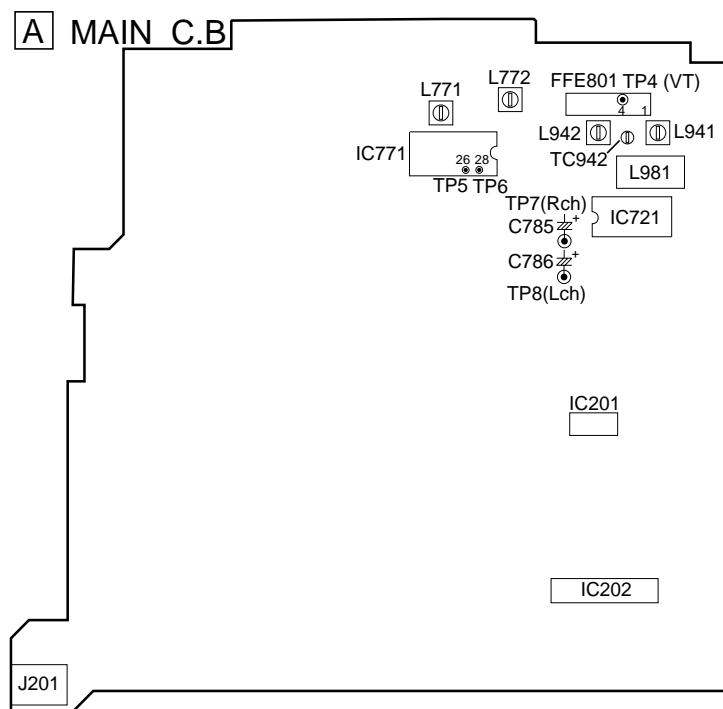
5) Press "■" button to display 「ALL SVOFF」 after checking.

• Checking all Servos are turned on.

1) Tracking and sled servos are turned on and all servos work when "ENTER" button is pressed in the 「FOCUS ON!」 state. 「ALL SV ON」 is displayed if all servos are normal.

2) Press "■" button to display 「ALL SVOFF」 after checking.

## ADJUSTMENT <TUNER / DECK>



HEAD AZIMUTH  
ADJUSTMENT SCREW

### < TUNER SECTION >

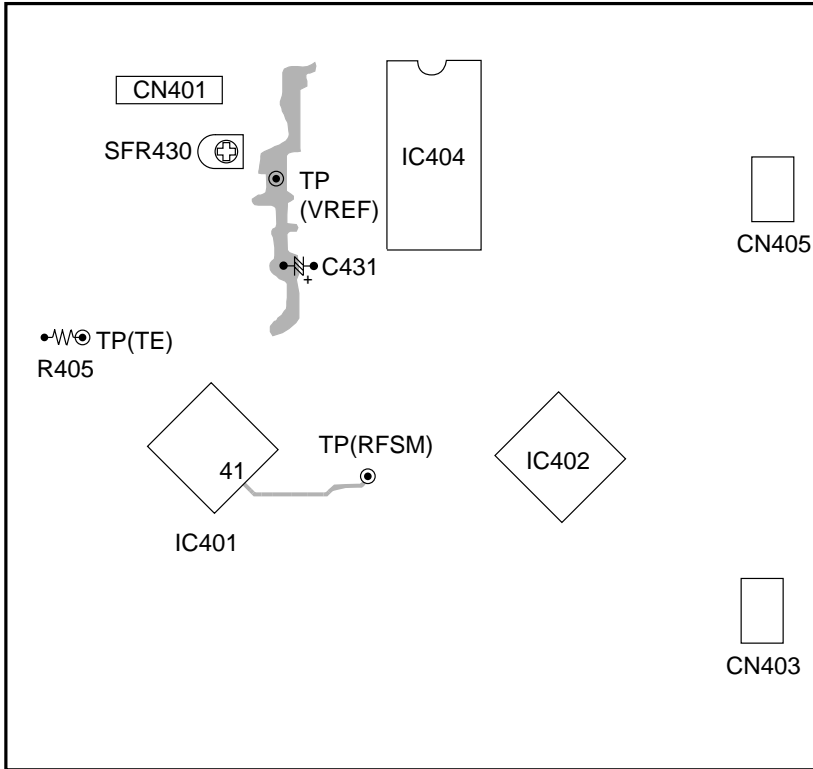
1. MW VT Check
  - Settings : • Test point : TP4 (VT)
  - Method : Set to MW 1602kHz and check that the test point is less than 5.6V.
2. MW Tracking Adjustment
  - Settings : • Test point : TP7 (RCH), TP8 (LCH)
  - Adjustment location : L981
  - Method : Set to MW 999kHz and adjust L981 so that the test point becomes maximum.
3. AM IF Adjustment
  - Settings : • Test point : TP7 (RCH), TP8 (LCH)
  - Adjustment location : L772 ..... 450kHz
4. LW VT Adjustment
  - Settings : • Test point : TP4 (VT)
  - Adjustment location : L942
  - Method : Set to LW 153kHz and adjust L942 so that the test point becomes  $1.3V \pm 0.05V$ .
5. LW Tracking Adjustment
  - Settings : • Test point : TP7 (RCH), TP8 (LCH)
  - Adjustment location : L941 ..... 153kHz
  - TC942 ..... 285kHz
  - Method : Set up TC942 to center before adjustment. The level at 153kHz is adjusted to maximum by L941. Then the level at 285kHz is adjusted to maximum by TC942.
6. FM VT Check
  - Settings : • Test point : TP4 (VT)
  - Method : Set to FM 108MHz and check that the test point is less than 8.2V. Then set to FM 87.5MHz and check that the test point is more than 1.5V.

7. FM Tracking Check
  - Settings : • Test point : TP7 (RCH), TP8 (LCH)
  - Method : Set to FM 98MHz and check that the test point is less than 18dB.
8. DC Balance / Mono Distortion Adjustment
  - Settings : • Test point : TP5, TP6 (DC balance)
  - TP7 (RCH), TP8 (LCH) (Distortion)
  - Adjustment location : L771
  - Input level : 54dB
  - Method : Set to FM 98MHz and adjust L771 so that the voltage between TP3 and TP4 becomes  $0V \pm 0.04V$ . Next, check that the distortion is less than 1.5%.
9. FM Separation Check
  - Settings : • Test point : PHONE JACK (J201)
  - Input level : 54dB
  - Method : Set to FM 98MHz and check that the test point is more than 20dB.

### < DECK SECTION >

10. Head Azimuth Adjustment
  - Settings : • Test tape : TTA-330
  - Test point : PHONE JACK (J201)
  - Adjustment location : Head azimuth adjustment screw
  - Method : 1) Connect the L positive terminal to CH1 probe (positive side) of oscilloscope and L negative terminal to CH1 probe (negative side). Connect the R positive and negative terminals to CH2 probe same condition as CH1 probe.
  - 2) Play back the 10kHz signal of the test tape.
  - 3) Adjust the head azimuth adjustment screw to become maximum waveform in the oscilloscope and same phase for CH1 and CH2.

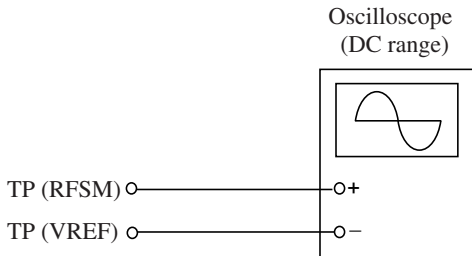
CD C.B



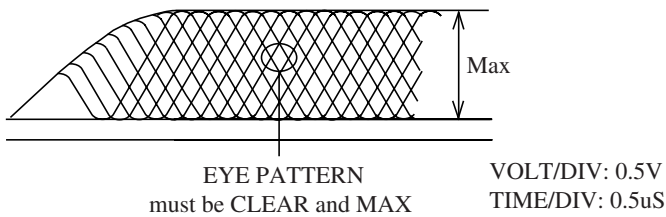
Note: • Connect a probe (10 : 1) of the oscilloscope to adjust.  
 • Connect negative side of the oscilloscope to TP (VREF) for each adjustment.

1. Focus Bias Adjustment

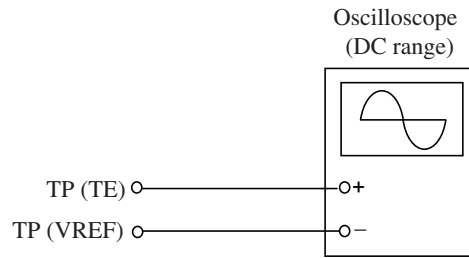
Adjust focus bias when replaing or repairing the optical block.



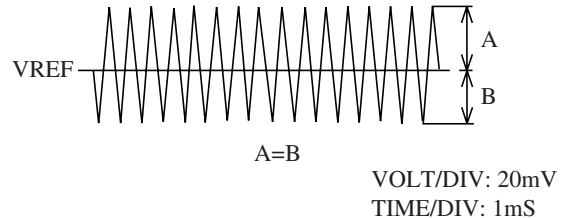
- 1) Connect an oscilloscope to the test points TP (RFSM) and TP(VREF).
- 2) Turn on the "POWER" button.
- 3) Insert the test disc TCD-782 (YEDS-18) and playack the 2nd composition.
- 4) Adjust SFR430 so that RF signal of the test point is MAX and CLEARREST.



2. Tracking Balance Adjustment



- 1) Connect an oscilloscope to the test point TP (TE) and TP (VREF).
- 2) Active the CD test mode.
- 3) Insert the test disc TCD-782 (YEDS-18) and choose traverse mode of CD test mode.
- 4) Check that the waveform of traverse is vertically symmetrical as shown below.
- 5) Cancel CD test mode after checking.





## <MD>

- Perform 1~3 adjustment when display showing [NO ADJUST].

### 1. Temperature Compensation Adjustment

- Test point: Check on the display.
- Tool : Thermometer
- Adjustment procedure
  - 1) After MD test mode has started up, press "■" button to display [ALL SVOFF].
  - 2) Press "DISPLAY" button to display [TEMP = ◇◇].
  - 3) Press "T-BASS" button to display [T + \*\* C ± ##].
  - 4) Put the thermometer near the MD mechanism to measure the room temperature.
  - 5) Adjust the indication value \*\* using "▶" and "◀" buttons until the value is the same as room temperature.  
Press "ENTER" button after adjusting.
  - 6) Press "■" button to display [ALL SVOFF] after adjusting.
  - 7) After adjustment is completed, once again set the display to [TMP + \*\* C ± ##] and check the value that has been calculated with the addition or subtraction of the numerical values of ## in relation to the \*\* value. This value is to be the same as room temperature.  
NOTE: Do not perform this adjustment if it is not possible to measure the room temperature.

### 2. Laser Power Adjustment

- Test point: Pickup laser output
- Tool : Laser power meter
- Adjustment procedure
  - 1) Starting in the [ALL SVOFF] status, press "EDIT" button three times to change the display to [LA WRITE].
  - 2) Press "T-BASS" button once and change the display to [LASER = \*\*].
  - 3) Measure the laser output of pickup with the laser power meter and adjust output by "▶▶" or "◀◀" buttons so that the measurement value becomes  $6.8\text{mW} \pm 0.03\text{mW}$ .  
Press "ENTER" button after adjusting.
  - 4) Press "■" button to display [ALL SVOFF] after adjusting.  
Caution: There is a possibility that pickup may be damaged if laser output exceeds  $7.0\text{mW}$ .

### 3. Auto Sequence Adjustment (EFB/IVR/FOCUS AGC/TRACKING AGC adjustment)

- Test disc: MDW-60, TGYS-1

#### Adjustment MO disc

- 1) Insert the MDW-60 test disc.
- 2) Press "■" button to display [ALL SVOFF].
- 3) Press "JOG MODE" button to display [SEL GRV].
- 4) When pressing "MD function" button, [AUTO ADJ] is displayed and adjustment start.  
After adjusting, [DONE] is displayed.  
(If [FAILED] is displayed, the adjustment failed.)
- 5) Press "■" button to display [ALL SVOFF].  
NOTE: 1. As there is a possibility that adjustment may not be able to adequately performed if the disc is dirty or scratched, make sure to keep the disc clean.  
2. When using a MO disc, one section will be erased in order to change it to WRITE POWER, so a special disc is to be used.

#### Checking for IVR, EFB and focus/tracking/sled gain of MO disc

- 1) Move the pickup to the center track using "▶▶" or "◀◀" buttons.
- 2) Press "▶▶" button to display [FOCUS ON].
- 3) Press "ENTER" button to switch the mode to [ALL SV ON].
- 4) Press "■" button and "DISPLAY" button twice.

Then, confirm the values of [I \*\* E ◇◇] in the display are within the following range.

[ \*\* ] ..... 04~0A  
[◇◇] ..... 09~15

- 5) Press "DISPLAY" button again.

Confirm the values of [F \*\* T ## S △△] in the display are within the following range.

[\*\*] ..... 1A~45  
[##] ..... 00~03

[△△] ..... 00~03

- 6) Press "■" button to display [ALL SVOFF].

#### Adjustment for PIT disc

- 1) Insert the TGYS-1 test disc.
- 2) Press "■" button to display [ALL SVOFF].
- 3) Press "JOG MODE" button to display [SEL PIT].
- 4) When pressing "MD function" button, [AUTO ADJ] is displayed and adjustment start.  
After adjusting, [DONE] is displayed.  
(If [failed] is displayed, the adjustment failed.)
- 5) Press "■" button to display [ALL SVOFF].

#### Checking IVR, EFB and focus/tracking/sled gain of PIT disc

Perform the same procedures as for MO disc and check that the display is within the range below;

[IVR].....14~19

[EFB].....09~15

[FOCUS GAIN].....1A~45

[Tracking gain].....00~3F

[Sled gain].....00~3F

### 4. Checking Error Rate (PIT disc)

- 1) Insert the TGYS-1 test disc.
- 2) Move the pickup to the center track using "▶▶" or "◀◀" buttons.
- 3) Press "JOG MODE" button to display [SEL PIT].
- 4) Press "▶▶" button to display [FOCUS ON].
- 5) Press "ENTER" button to switch the mode to [ALL SV ON].  
Then press "DISPLAY" button twice to display [00 \*\* 000].
- 6) Check the value of \*\* is below [30] at this time.
- 7) Press "■" button to display [ALL SVOFF].

### 5. Checking Record/Playback Error Rate (MO disc)

- 1) Insert the MDW-60 test disc.
- 2) Move the pickup to the center track using "▶▶" or "◀◀" buttons.
- 3) Press "JOG MODE" button to display [SEL GRV].
- 4) Press "MD REC" button to display [R ANALOG].
- 5) Press "▶▶" button to display [FOCUS ON].
- 6) After displaying [ALL SV ON] by pressing "ENTER" button, press "SYNCHRO REC" button.
- 7) Recording begins after OWH has moved when "MD REC" button is pressed once again.  
At this time, display will change from [ALL SV ON] to [A0600C ## S].
- 8) Press "■" button after recording has progressed for about 15 seconds, changing the display to [ALL SVOFF].
- 9) Press "MD EJECT" button to raise the OWH.
- 10) Press "▶▶" button to display [FOCUS ON].
- 11) Once [ALL SV ON] has been displayed by pressing "ENTER" button, press "DISPLAY" button to display [A \*\*\*\* C ## S].  
After \*\*\*\* reaching 600, press "DISPLAY" button once again to display [00 \*\* 000].  
Check that the value of \*\* is below than [20] at this time.

12) Press "■" button to display [ALL SVOFF].

#### 6. UTOC Erase

To be performed only when erasure is needed with disc that have already been recorded upon.

- 1) Insert the disc that is to be used to erase the UTOC.
- 2) Move the pickup to the center track using "▶▶" or "◀◀" buttons.
- 3) Press "JOG MODE" button to display [SEL GRV].
- 4) Press "MD REC" button to display [R ANALOG].
- 5) Press "▶■" button to display [FOCUS ON].
- 6) Press "ENTER" button to display [ALL SV ON].
- 7) Press "MD REC" button for more than one second continuously, [UTOC ERASE] will be displayed and UTOC erased.
- 8) Once the UTOC has been erased, [ALL SVOFF] will be displayed.

#### 7. EEPROM Initialization

\* Initialize adjusted values in the EEPROM to default values as following steps.

\* Perform 1~3 adjustment after initialized EEPROM.

- 1) Press "CLOCK/TIMER" button.
- 2) Press "POWER" button and confirm display is shown [NO Adjust].

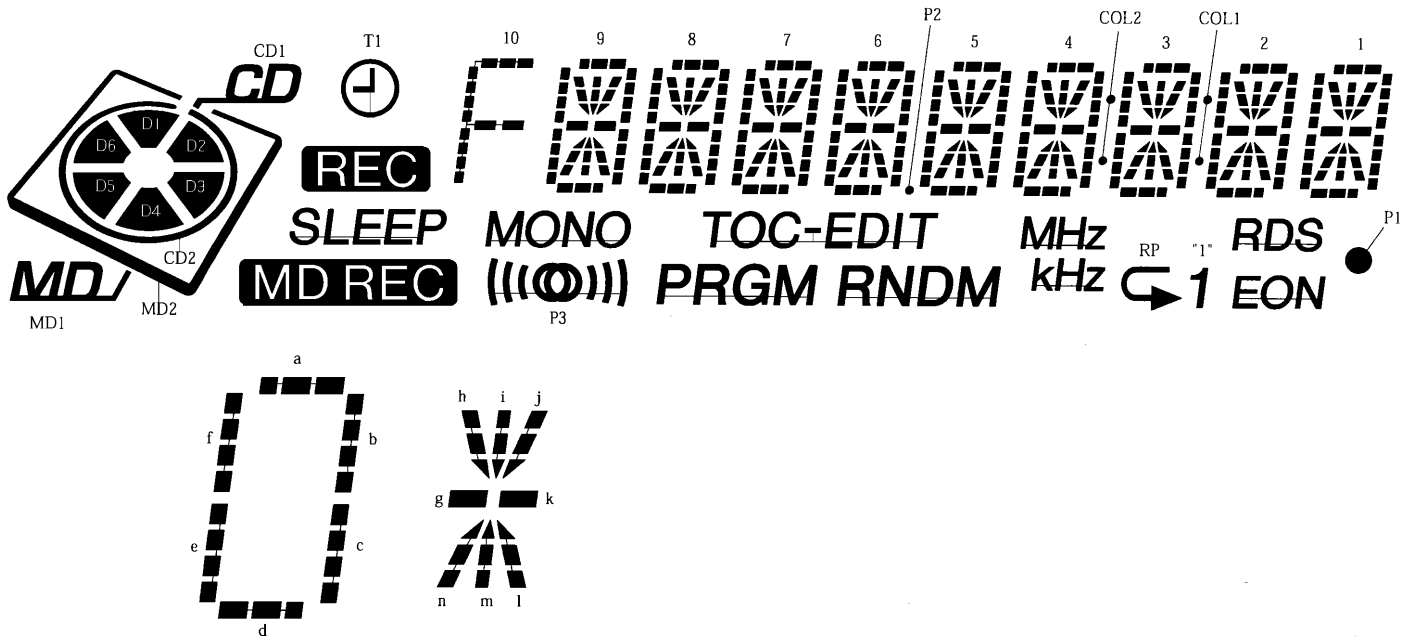
NOTE: MD operation is able to work in the [NO Adjust] status.

# SERVICE JIG AND TOOLS

Service jigs and tools for repairing as follows;

	Usage	Parts Name	Parts No
CD	CD mecha stand	JIG, P-CD BY TORIKOSHI	SV-J00-018-010
	PU extention FFC	FFC-CABLE, 16P 1.0 250mm	87-CE1-640-010
MD	S.T.I. G-98-50	FFC, 8P-1.0	SV-J00-043-010
	S.T.I. G-98-50	FFC, 14P-1.0	SV-J00-044-010

## LCD DISPLAY GRIDASSIGNMENT



## ANODE CONNECTION

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COM 1	--	--	--	COM 1	1a	1i	1h	1f	2a	2i	2h	COL1	3a	3i	3h
COM 2	--	--	COM 2	--	1b	1j	1g	1e	2b	2j	2g	2f	3b	3j	3g
COM 3	--	COM 3	--	--	1c	1k	1n	1d	2c	2k	2n	2e	3c	3k	3n
COM 4	COM 4	--	--	--	P1	1l	1m	EON	RDS	2l	2m	2d	"1"	3l	3m

No	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
COM 1	3f	--	4a	4i	4h	4f	5a	5i	5h	5f	6a	6i	6h	6f	7a
COM 2	3e	COL2	4b	4j	4g	4e	5b	5j	5g	5e	6b	6j	6g	6e	7b
COM 3	3d	MHz	4c	4k	4n	4d	5c	5k	5n	5d	6c	6k	6n	6d	7c
COM 4	RP	kHz	--	4l	4m	--	P3	5l	5m	RNDM	P2	6l	6m	PRGM	TOC EDIT

No	31	32	33	34	35	36	37	38	39	40	41	42	43
COM 1	7i	7h	7f	8a	8i	8h	8f	9a	9i	9h	9f	MD1	D3,D6
COM 2	7j	7g	7e	8b	8j	8g	8e	9b	9j	9g	9e	T1	D2,D5
COM 3	7k	7n	7d	8c	8k	8n	8d	9c	9k	9n	9d	CD1	CD2
COM 4	7l	7m	MD REC	MONO	8l	8m	SLEEP	REC	9l	9m	10	MD2	D1,D4

# IC DESCRIPTION

IC, LC877264A-EZ

Pin No.	Pin Name	I/O	Description
1	O-ARDY	O	Output ready signal for MD micro controller communication. L: Enable.
2	O-SREQ	O	Request system micro controller output for MD micro controller communication. L: Enable.
3	O-SOUT	O	Output serial data for MD micro controller communication.
4	I-SIN	I	Input serial data for MD micro controller communication.
5	I-ACLK	I	Input serial clock for MD micro controller communication.
6	I-MREQ	I	Request system micro controller output for MD micro-computer communication. L: Enable.
7	NC (SELECT)	-	Not used.
8	O-PCONT	O	Output system power control. H: ON.
9	I-HOLD	I	Detect Hold status. L: HOLD.
10	O-CLKSFT	O	Control clock shift. L: Shift.
11	I-RESET	I	Input reset.
12	XT1	I	Not used (pull up in VDD).
13	XT2	-	Not connected.
14	VSS1	-	Power supply (-) terminal.
15	CF1	I	Input terminal for ceramic oscillator (5.76MHz).
16	CF2	O	Output terminal for ceramic oscillator (5.76MHz).
17	VDD1	-	Power supply (+) terminal.
18	I-JOGA	I	Detect jog dial A.
19	I-JOGB	I	Detect jog dial B.
20	I-KEY1	I	Detect tact key AD input.
21	I-KEY2		
22	I-RDSIG	I	Input RDS signal level and AD.
23	I-CTON	I	Detect CT deck power. H: OFF, L: ON.
24	I-RDDT	I	Input RDS data.
25	I-COLOR	I	Input LCD back light initial setting.
26	I-TMBASE	I	Input reference frequency for 8Hz clock.
27	I-INIT	I	Input diode matrix initial setting.
28	I-RDCL	I	Input RDS clock.
29	I-RMC	I	Input received signal for remote controller.
30	I-CTPLAY	I	Detect CT deck play. H: PLAY.
31	I-CTREC	I	Detect CT deck record. H: REC.
32	O-TUCONT	O	Control tuner power. H: ON.
33	O-TUCE	O	Output chip enable for tuner PLL communication.
34	O-TUDI	O	Output serial data for tuner PLL communication.
35	O-TUCL	O	Output clock for tuner PLL communication.
36	I-TUDO	I	Input serial data for tuner PLL communication.
37	I-STEREO	I	Detect receiving tuner stereo. H: MONO, L: STEREO.
38	NC	-	Not connected.
39~53	S9~S23	O	Output LCD segment.
54	VDD2	-	Power supply (+) terminal.
55	VCC2	-	Power supply (-) terminal.
56~79	S24~S47	O	Output LCD segment.

Pin No.	Pin Name	I/O	Description
80	I-DOOR	I	Detect CD door. H: OPEN, L: CLOSE.
81	I-WRQ	I	Sub code Q read standby for CD LSI communication.
82	I-DRF	I	Input RF level detection.
83	COM0	O	Output COM1.
84	COM1	O	Output COM2.
85	COM2	O	Output COM3.
86	COM3	O	Output COM4.
87	O-CDCONT	O	Control CD power. H: ON.
88	I-SQOUT	I	Input sub code Q for CD LSI communication
89	VSS3	-	Power supply (-) terminal.
90	VDD3	-	Power supply (+) terminal.
91	O-RWC	O	Input/output switching control for CD LSI communication. H: Write, L: Read.
92	O-COIN	O	Output serial data for CD LSI communication.
93	O-CQCK	O	Output serial clock for CD LSI communication.
94	O-LIGHT1	O	Output LCD back light control 1.
95	O-JOGLED	O	Indicate the JOG function status. L: Volume.
96	O-SCONTM	O	Control sound processor. H: H, M: H, L: L.
97	O-SCONTL	O	Control sound processor. H: H, M: L, L: L.
98	O-MUTE	O	Output audio signal mute. H: ON.
99	O-LIGHT2	O	Output LCD back light cotrol 2.
100	O-SRST	O	Reset MD micro controller. L: Reset.

## IC, LA9241ML

Pin No.	Pin Name	I/O	Description
1	FIN2	I	Connect to the pickup's photo diode; adding this pin to pin FIN1 generates RF signal, and subtracting it generates FE signal.
2	FIN1	I	Connect to the pickup's photo diode.
3	E	I	Connect to the pickup's photo diode; subtracting this pin from pin F generates TE signal.
4	F	I	Connect to the pickup's photo diode.
5	TB	I	Input for DC component of TE signal.
6	TE-	I	Connect to the resistor between this pin and TE pin for setting the gain of TE signal.
7	TE	O	Output for TE signal.
8	TESI	I	Input for TES (Track Error Sense) comparator, TE signal is band-passed and inputted.
9	SCI	I	Input for shock detection.
10	TH	I	For setting tracking gain time constant.
11	TA	O	TA amplifier output pin.
12	TD-	I	For constructing tracking phase compensation constant between TD and VR pins.
13	TD	O	For setting tracking phase compensation.
14	JP	I	For setting the amplifier of tracking jump signal (kick pulse).
15	TO	O	Output for tracking control signal.
16	FD	O	Output for focusing control signal.
17	FD-	I	For constructing focusing phase compensation constant between FD and FA pins.
18	FA	O	For constructing focusing phase compensation constant between FD- and FA- pins.
19	FA-	I	For constructing focusing phase compensation constant between FA and FE pins.
20	FE	O	Output for FE signal.
21	FE-	I	Connect to the gain-setting resistor of FE signal between this pin and FE pin.
22	AGND	-	GND for analog signals.
23	SP	O	Single end output of CV+ and CV- pin input signal.
24	SPI	I	Input spindle amplifier.
25	SPG	I	Connect to the gain-setting resistor during spindle 12cm mode. (Not connected)
26	SP-	I	Connect to spindle phase compensation constant together with SPD pin.
27	SPD	O	Output for spindle control signal.
28	SLEQ	I	Connect to sled phase compensation constant.
29	SLD	O	Output for sled control signal.
30	SL-	I	Input for sled-sending signal from microcontroller.
31	SL+		
32	JP-	I	Input for tracking jump signal from DSP.
33	JP+		
34	TGL	I	Input for tracking gain control signal from DSP; gain is low if TGL = "H".
35	TOFF	I	Input for tracking off control signal from DSP; off if TOFF = "H".
36	TES	O	Output TES signal to DSP.
37	HFL	O	HIGH FREQUENCY LEVEL; used to determine whether the main beam is on a pit or on a mirror.
38	SLOF	I	Input for sled servo off control.

Pin No.	Pin Name	I/O	Description
39	CV-	I	Input for CLV error signal from DSP.
40	CV+		
41	RFSM	O	Output for RF.
42	RFS-	O	For setting RF gain and 3T compensation constant together with RFSM.
43	SLC	O	SLICE LEVEL CONTROL; output for controlling the data slice level of DSP with RF waveform.
44	SLI	I	Input for controlling the data slice level of DSP.
45	DGND	-	GND for digital system.
46	FSC	O	Output pin for focus search smoothing capacitor.
47	TBC	I	(Tracking Balance Control) EF balance variable range setting pin.
48	NC	-	Not connected.
49	DEF	O	Output for disk defect detection.
50	CLK	I	Reference clock input; DSP's 4.23MHz is inputted.
51	CL	I	Clock input for micro controller command.
52	DAT	I	Data input for micro controller command.
53	CE	I	Chip-enable input for micro controller command.
54	DRF	O	Detect RF; output for RF level detection.
55	FSS	I	(Focus Search Mode) = search/+search against reference voltage switching pin. (Not connected)
56	VCC2	-	VCC pin for servo and digital systems.
57	REFI	-	For connecting pass capacitor to reference voltage.
58	VR	O	Reference voltage output.
59	LF2	-	For setting disk defect-detection time constant.
60	PHI	-	Connect to capacitor for RF signal peak hold.
61	BHI	-	Connect to capacitor for RF signal bottom hold.
62	LDD	O	Output for APC circuit.
63	LDS	I	Input for APC circuit.
64	VCC1	-	VCC pin for RF system.



IC, LC78622ED

Pin No.	Pin Name	I/O	Description
1	DEFI	I	Defect detection signal (DEF) input.
2	TAI	I	Test input. A pull-down resistor is built in. (Must be connected to 0V)
3	PDO	O	External VCO control phase comparator output.
4	VVSS	–	Internal VCO ground. (Must be connected to 0V)
5	ISET	I	PDO output current adjustment resistor connection.
6	VVDD	–	Internal VCO power supply.
7	FR	I	VCO frequency range adjustment.
8	VSS	–	Digital system ground. (Must be connected to 0V)
9	EFMO	O	Slice level control; EFM signal output.
10	EFMIN	I	Slice level control; EFM signal input.
11	T2	I	Test input. A pull-down resistor is built in. (Must be connected to 0V)
12	CLV+	O	Disc motor control output.
13	CLV–		Three-value output is also possible when specified by microprocessor command.
14	V/P	O	Rough servo/phase control automatic switching monitor output. H: Rough servo, L:phase servo.
15	HFL	I	Track detection signal input. This is a Schmitt input.
16	TES	I	Tracking error signal input. This is a Schmitt input.
17	TOFF	O	Tracking off output.
18	TGL	O	Tracking gain switching output. Increase the gain when low.
19	JP+	O	Track jump output.
20	JP–		Three-value output is also possible when specified by microprocessor command.
21	PCK	O	EFM data playback clock monitor. Outputs 4.3218 MHz when the phase is locked. (Not connected)
22	FSEQ	O	Synchronization signal detection output. Outputs a high level when the synchronization signal detected from the EFM signal and the internally generated synchronization signal agree. (Not connected)
23	VDD	–	Digital system power supply.
24	SL+	O	Sled advance + signal output.
25	SL–	O	Sled advance - signal output.
26	NC	–	Not connected.
27	PU IN	I	CD pickup inside limit switch. When inside limit input "L", when CD-RW output "H".
28	RW	O	Gain control.
29	EMPH	O	De-emphasis monitor pin. De-emphasis disc is being played back at H. (Not connected)
30	C2F	O	C2 flag output. (Not connected)
31	DOUT	O	Digital output (EIAJ format).
32	T3	I	Test input. A pull-down resistor is built in. (Must be connected to 0V)
33	T4		
34	NC	–	Not connected.
35	MUTEL	O	Left channel one-bit DAC L channel mute output. (Not connected)
36	LVDD	–	Left channel one-bit DAC L channel power supply.
37	LCHO	O	Left channel one-bit DAC L channel output.
38	LVSS	–	Left channel one-bit DAC L channel ground. (Must be connected to 0V)

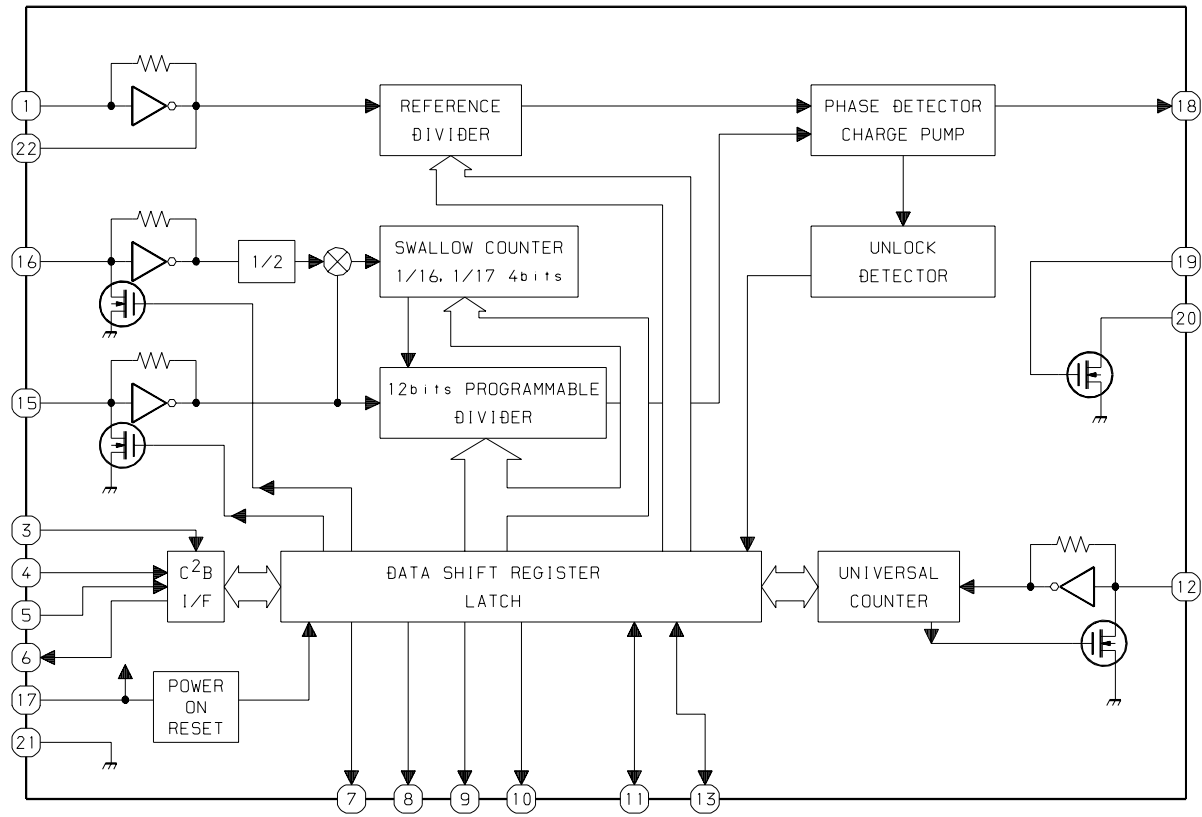
Pin No.	Pin Name	I/O	Description
39	RVSS	–	Right channel one-bit DAC R channel ground. (Must be connected to 0V)
40	RCHO	O	Right channel one-bit DAC R channel output.
41	RVDD	–	Right channel one-bit DAC R channel power supply.
42	MUTER	O	Right channel one-bit DAC R channel mute output. (Not connected)
43	XVDD	–	Crystal oscillator power supply.
44	XOUT	O	Connection for a 16.934MHz crystal oscillator element.
45	XIN	I	
46	XVSS	–	Crystal oscillator ground. (Must be connected to 0V)
47	SBSY	O	Subcode block synchronization signal output. (Not connected)
48	EFLG	O	C1, C2 single and double error correction monitor pin. (Must be connected to 0V)
49	PW	O	Subcode P, Q, R, S, T, U, V and W output. (Not connected)
50	SFSY	O	Subcode frame synchronization signal output. This signal falls when the subcode are in the standby state. (Not connected)
51	SBCK	I	Subcode readout clock input. This is a Schmitt input. (Must be connected to 0V)
52	FSX	O	Output for the 7.35 kHz synchronization signal divided from the crystal oscillator. (Not connected)
53	WRQ	O	Subcode Q output standby output.
54	RWC	I	Read/write control input. This is a Schmitt input.
55	SQOUT	O	Subcode Q output.
56	COIN	I	Command input from the control microprocessor.
57	$\overline{\text{CQCK}}$	I	Command input read clock or subcode readout input clock from SQOUT pin. This is a Schmitt input
58	$\overline{\text{RES}}$	I	Reset pin. This pin must be set low briefly after power is first applied.
59	T11	O	Test output. Leave open. (Normally outputs a low level). (Not connected)
60	16M	O	16.9344 MHz output. (Not connected)
61	4.2M	O	4.2336 MHz output.
62	T5	I	Test input. A pull-down resistor is built in. (Must be connected to 0V)
63	$\overline{\text{CS}}$	I	Chip select input. A pull-down resistor is built in. (Must be connected to 0V)
64	T1	I	Test input. No pull-down resistor. (Must be connected to 0V)

IC, LC72131D

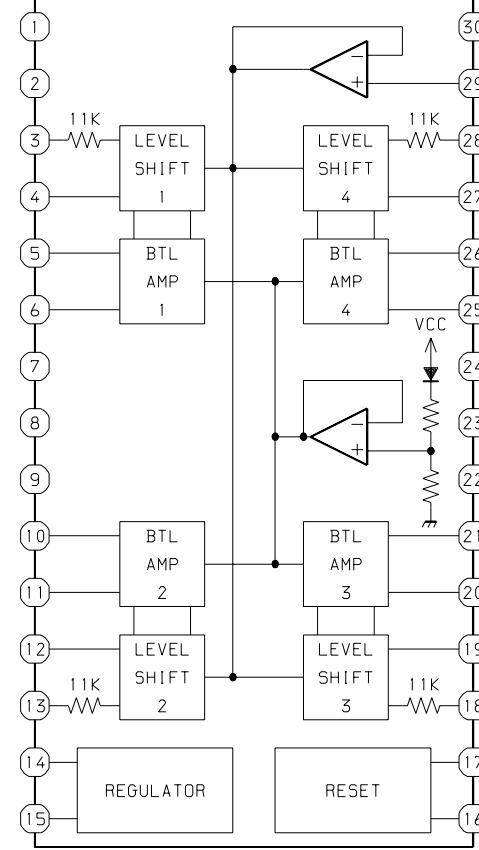
Pin No.	Pin Name	I/O	Description															
1	X IN	I	A crystal oscillator (4.5MHz) is connected to X OUT pin.															
2	NC	–	Not connected.															
3	CE	I	To enable the IC. Active "H".															
4	DI	I	Digital data input from CPU (LC877264A-EZ) when relevant key is operated. Active "H".															
5	CL	I	To clock in the data DI.															
6	DO	O	Digital data output to CPU (LC877264A-EZ).															
7	T-BASE	O	Output a reference clock signal (8Hz) for the clock.															
8	$\overline{\text{MONO}} / \text{BEAT}$	O	Output "L" when MONO / BEAT is switched.															
9	$\overline{\text{FM}} / \overline{\text{SW}}$	O	Output "L" or "H" as follows: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">2 BAND</th> <th colspan="3">3 BAND</th> </tr> <tr> <th>AM</th> <th>FM</th> <th>LW</th> <th>MW</th> <th>FM</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>L</td> <td>H</td> <td>H</td> <td>L</td> </tr> </tbody> </table>	2 BAND		3 BAND			AM	FM	LW	MW	FM	H	L	H	H	L
2 BAND		3 BAND																
AM	FM	LW	MW	FM														
H	L	H	H	L														
10	$\overline{\text{MW}} / \overline{\text{SW}}$	O	Output "L" or "H" as follows: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">2 BAND</th> <th colspan="3">3 BAND</th> </tr> <tr> <th>AM</th> <th>FM</th> <th>LW</th> <th>MW</th> <th>FM</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>L</td> <td>H</td> <td>L</td> <td>L</td> </tr> </tbody> </table>	2 BAND		3 BAND			AM	FM	LW	MW	FM	L	L	H	L	L
2 BAND		3 BAND																
AM	FM	LW	MW	FM														
L	L	H	L	L														
11	IF-MUTE	O	To control internal counter.															
12	IF-IN	I	General purpose counter input.															
13	$\overline{\text{TUNE}}$	I	Receives "L" when station is tuned.															
14	NC	–	Not connected.															
15	AMIN	I	Receives the AM local oscillator frequency signal.															
16	FMIN	I	Receives the FM local oscillator frequency signal.															
17	VDD	–	Supply power to IC (+5V).															
18	PD	O	PLL charge pump output.															
19	AIN	I	The MOS transistor used for PLL active low pass filter.															
20	AOUT	O																
21	VSS	–	Ground.															
22	X OUT	O	A crystal oscillator (4.5MHz) is connected to X IN pin.															

IC BLOCK DIAGRAM

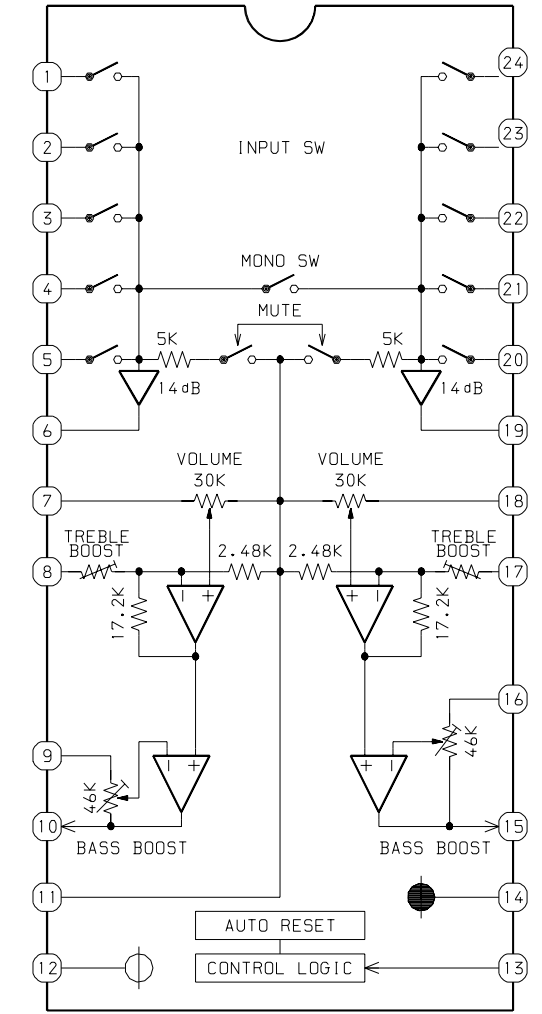
IC, LC72131D



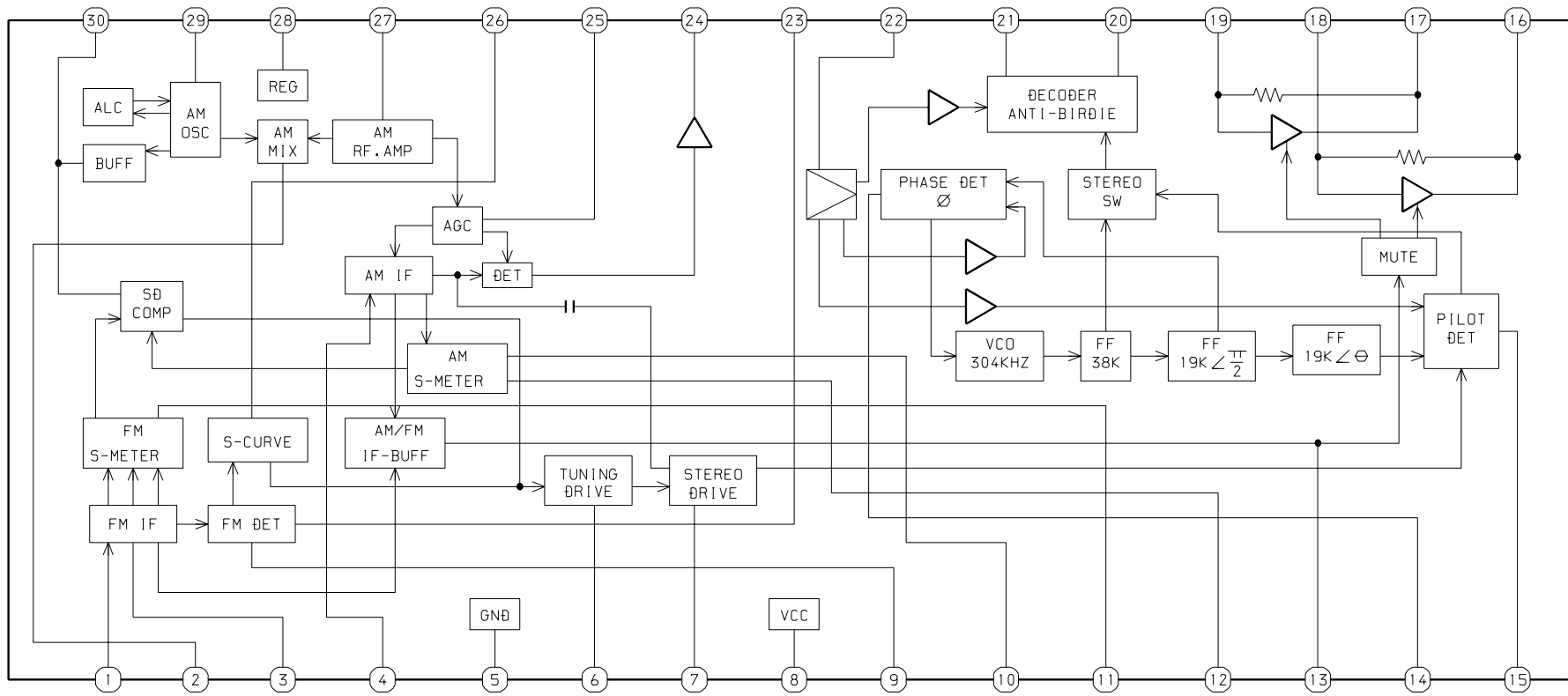
IC, LA6541D



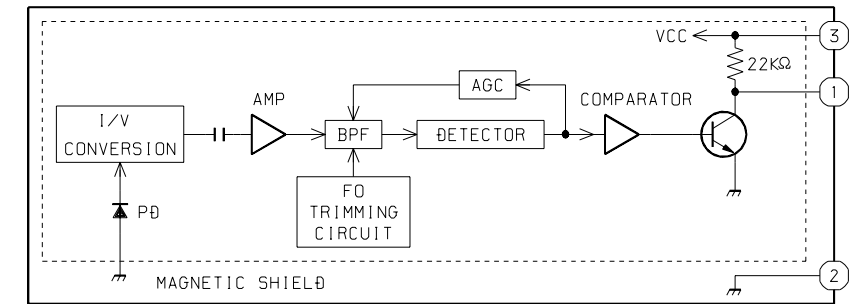
IC, M62495AFP



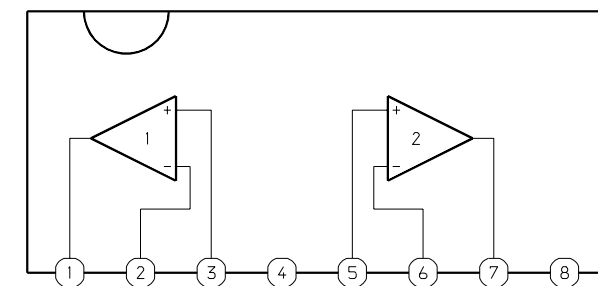
IC, LA1837NL



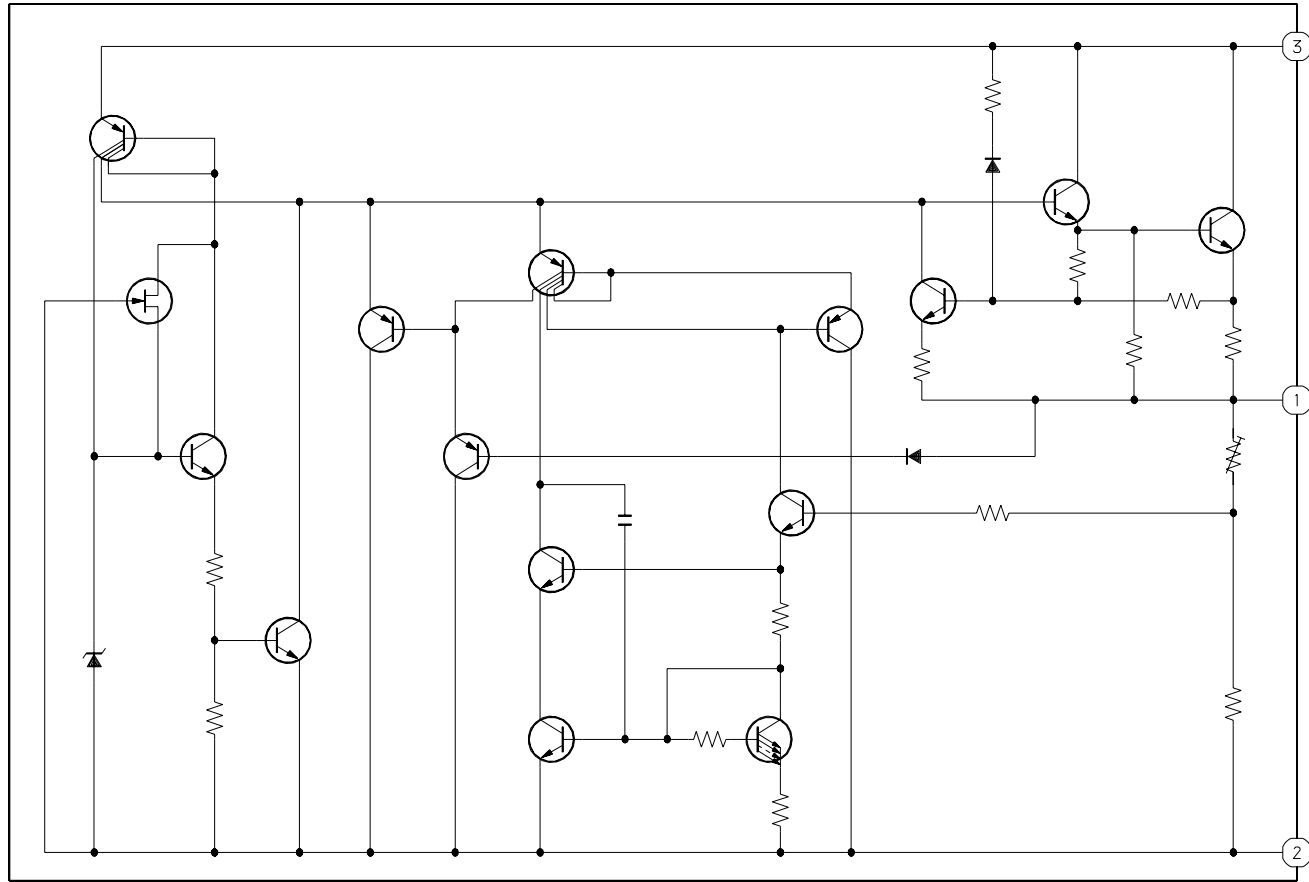
IC, RPM6938-H4



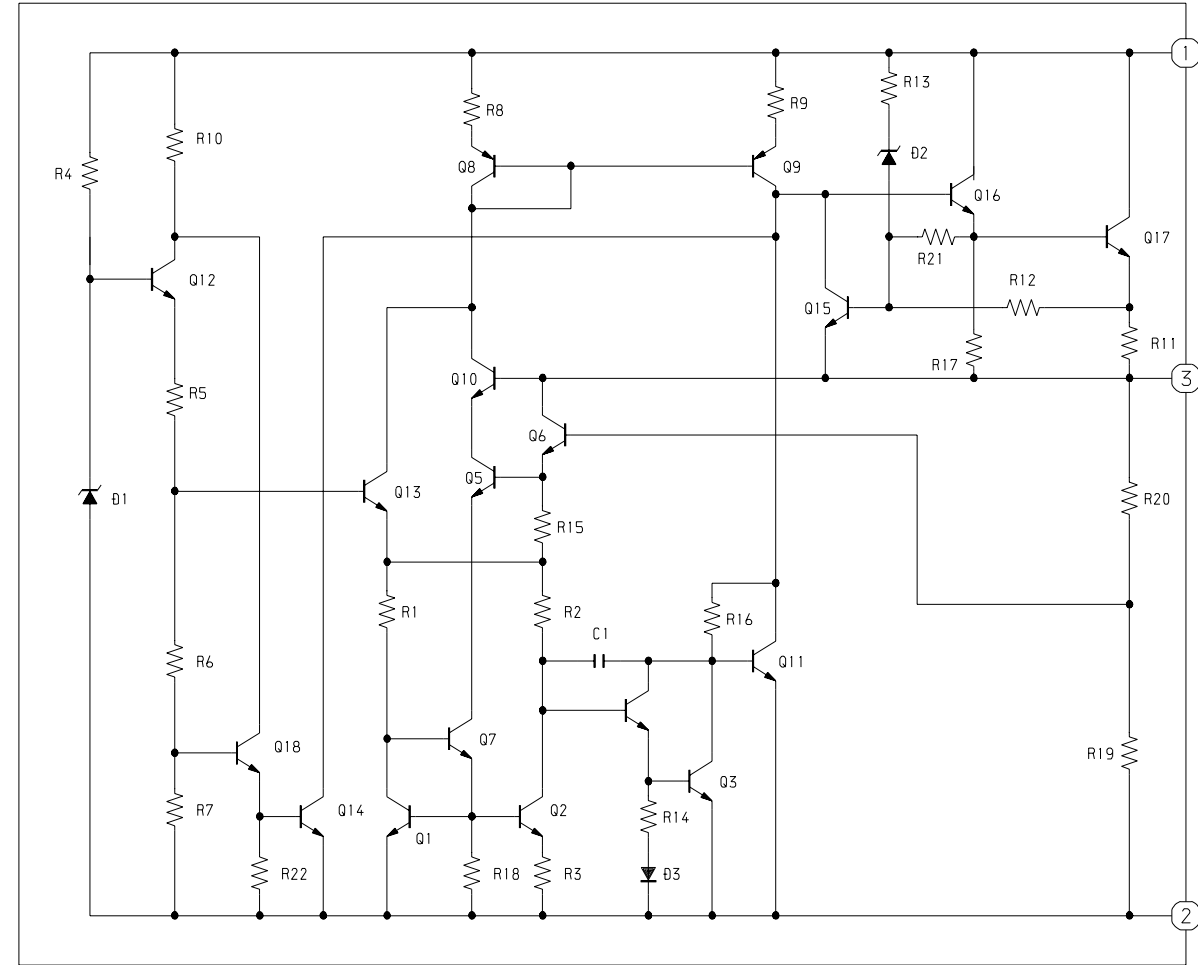
IC, BA4560N



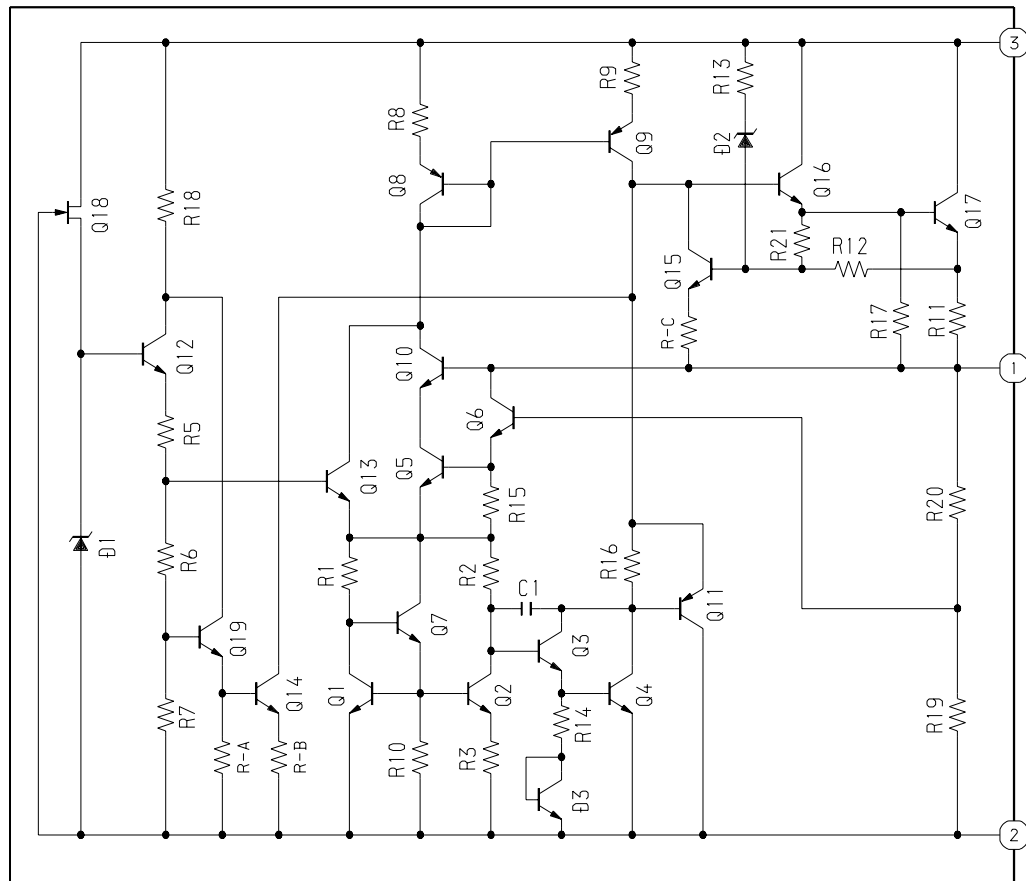
IC, NJM78L06A



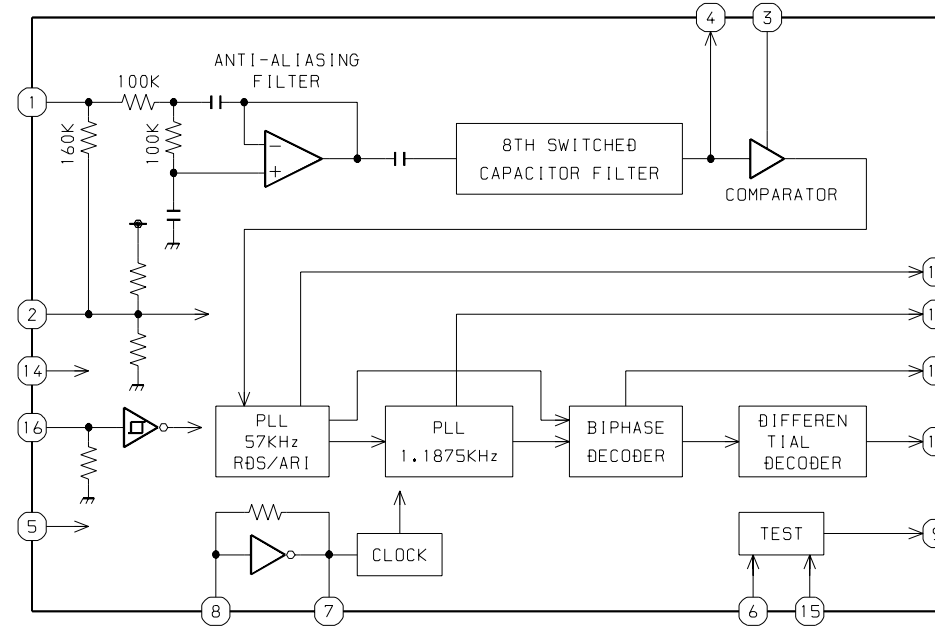
IC, BA17808T



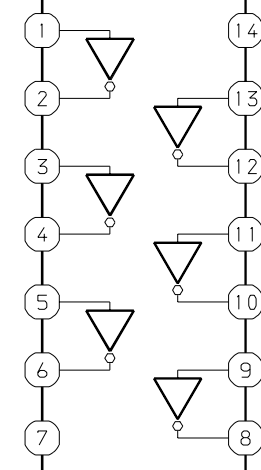
IC, NJM7806FA



IC, BU1920FS



IC, TC74HCT7007AF



# VOLTAGE CHART

< CD > Test condition : CD play

## IC401(LA9241ML)

Pin No.	Voltage
1	2.5
2	2.5
3	2.5
4	2.5
5	2.5
6	2.5
7	2.5
8	2.5
9	2.5
10	2.5
11	2.5
12	2.5
13	2.4
14	2.5
15	2.5
16	2.5
17	2.5
18	2.5
19	2.5
20	2.5
21	2.5
22	0
23	2.5
24	2.5
25	2.5
26	2.5
27	2.6
28	2.5
29	2.6
30	2.3
31	2.3
32	0
33	0
34	5.0
35	0
36	1.6
37	0
38	0
39	0
40	0.2

Pin No.	Voltage
41	2.3
42	2.4
43	2.6
44	2.5
45	0
46	2.5
47	2.5
48	0
49	0
50	2.5
51	4.3
52	5.1
53	0
54	4.8
55	0
56	5.0
57	2.5
58	2.5
59	2.4
60	2.4
61	2.2
62	3.7
63	0.2
64	5.0

## IC402(LC78622ED)

Pin No.	Voltage
1	0
2	0
3	1.5
4	0
5	1.9
6	5.0
7	0.3
8	0
9	2.5
10	2.6
11	0
12	0.2
13	0
14	0
15	0
16	1.6
17	0
18	5.0
19	0
20	0
21	2.5
22	5.0
23	5.0
24	0
25	0
26	5.0
27	5.0
28	0
29	0
30	0
31	2.4
32	0
33	0
34	0
35	0
36	4.8
37	2.1
38	0
39	0
40	2.1

Pin No.	Voltage
41	4.8
42	0
43	5.0
44	2.1
45	2.1
46	0
47	0.1
48	0
49	0.1
50	2.5
51	0
52	2.5
53	1.6
54	0
55	0.3
56	5.1
57	4.3
58	5.0
59	0
60	2.5
61	2.4
62	0
63	0
64	0

< CD >

IC403(LA6541D)

Pin No.	Voltage
1	7.8
2	5.0
3	0
4	2.5
5	3.5
6	3.5
7	0
8	0
9	0
10	3.5
11	3.5
12	2.5
13	2.5
14	5.0
15	7.1
16	5.0
17	4.9
18	2.5
19	2.5
20	3.7
21	3.2
22	0
23	0
24	0
25	3.5
26	3.5
27	2.5
28	2.5
29	2.5
30	7.8

< TUNER > Test condition : Tuner function

IC721(LC72131D)

Pin No.	Voltage	
	AM	FM
1	2.6	2.5
2	0	0
3	0	0
4	0	0
5	0	0
6	5.2	2.4
7	2.5	2.5
8	0	8.0
9	8.0	0
10	0	0
11	0	0
12	0	0
13	7.9	2.5
14	0	0
15	2.6	0
16	0	2.6
17	5.3	5.2
18	1.0	1.0
19	1.0	1.0
20	1.3	0.9
21	0	0
22	2.6	2.5

Q771(2SA952)

E	C	B
8.0	8.0	7.3

Q773(DTC114Y)

E	C	B
0	0	3.3

IC771(LA1837N)

Pin No.	Voltage	
	AM	FM
1	3.6	3.6
2	8.0	8.0
3	3.6	3.6
4	3.6	0
5	0	0
6	7.9	2.5
7	5.7	5.6
8	8.0	8.0
9	8.0	8.0
10	1.2	1.2
11	0	0.9
12	0	0
13	0.4	0.4
14	4.1	6.9
15	4.6	6.9
16	4.3	4.3
17	4.3	4.3
18	4.3	4.3
19	4.3	4.3
20	3.3	3.3
21	3.3	3.3
22	2.8	2.9
23	3.5	3.6
24	0.7	0.3
25	0.6	0
26	3.6	3.6
27	3.6	3.6
28	3.6	3.6
29	3.6	3.6
30	2.0	2.2

< TAPE / AMP > Test condition : Tape function(tape stop)

IC103(BA4560N)

Pin No.	Voltage
1	3.3
2	3.3
3	3.3
4	0
5	3.3
6	3.3
7	3.3
8	6.7

IC201(M62495AFP)

Pin No.	Voltage
1	2.5
2	2.5
3	2.5
4	2.5
5	2.5
6	2.5
7	2.5
8	2.2
9	2.5
10	2.5
11	2.5
12	5.3
13	2.7
14	0
15	2.5
16	2.5
17	2.2
18	2.5
19	2.5
20	2.5
21	2.5
22	2.5
23	2.5
24	2.5

IC202(TA8223K)

Pin No.	Voltage
1	0
2	20.4
3	10.8
4	20.7
5	10.8
6	20.4
7	0
8	20.7
9	10.7
10	0.6
11	0
12	0
13	0
14	0.6
15	0

IC101(BA17808)

Pin No.	Voltage
1	12.8
2	8.0
3	0

IC102(NJM7806FA)

Pin No.	Voltage
1	12.8
2	5.9
3	0

IC103(NJM78L06)

Pin No.	Voltage
1	12.8
2	5.9
3	0

Q101(2SB1370E)

E	C	B
12.8	12.8	12.1

Q102(DTC114Y)

E	C	B
0	0	4.2

Q103(2SB1370E)

E	C	B
20.7	10.8	20.1

Q104(KTC3198GR)

E	C	B
10.1	20.1	10.7

Q203(2SA952)

E	C	B
20.7	20.7	20.0

Q204(KTC3198GR)

E	C	B
3.3	12.8	4.0



**アイワ株式会社** 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)  
**AIWA CO.,LTD.** 2-11, IKENOHATA 1-CHOME, TAITO-KU, TOKYO 110, JAPAN TEL:03 (3827) 3111