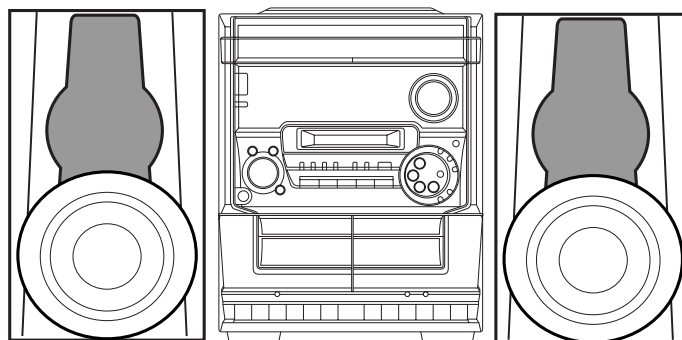




SERVICE MANUAL

MD / CD STEREO SYSTEM

BASIC TAPE MECHANISM : ZZM-2 YPR1NF
BASIC CD MECHANISM : AZG-1 YSB3RMDM
BASIC MD MECHANISM : AZG-E D

SYSTEM	CD CASSEIVER	SPEAKER	REMOTE CONTROLLER
XR-HG2MD	CX-NHG2MD	SX-NHG2	RC-ZAS16

- If requiring information about the CD mechanism, see Service Manual of AZG-1 YSB3RMDM, (S/M Code No. 09-001-335-3NE).
- If requiring information about the MD mechanism, see Service Manual of AZG-E D, (S/M Code No. 09-006-347-9N2).

aiwa

S/M Code No. 09-00B-437-4N2



SPECIFICATIONS

Main unit

<FM tuner section>

Tuning range	87.5 MHz to 108 MHz
Usable sensitivity (IHF)	16.8 dBf
Antenna terminals	75 ohms (unbalanced)

<MW tuner section>

Tuning range	530 kHz to 1710 kHz (10 kHz step) 531 kHz to 1602 kHz (9 kHz step)
Usable sensitivity	350 μ V/m
Antenna	Loop antenna

<LW tuner section>

Tuning range	144 kHz to 290 kHz
Usable sensitivity	1400 μ V/m
Antenna	Loop antenna

<Amplifier section>

Power output *	Rated: 20 W + 20 W (6 ohms, T.H.D. 1 %, 1 kHz / DIN 45500) Reference: 25 W + 25 W (6 ohms, T.H.D. 10 %, 1 kHz / DIN 45324) EZ: DIN MUSIC POWER 42 W + 42 W
Total harmonic distortion	0.06 % (10 W, 1 kHz, 6 ohms, DIN AUDIO)
Inputs	* without connecting to the SURROUND SPEADIRS. VIDEO / AUX: 500 mV DIGITAL IN SPEAKERS: accept speakers of 6 hms SURROUND SPEAKERS: accept speakers of 8 to 16 ohms SUPER WOOFER: 1.1 V PHONES (stereo mini jack): accepts headphones of 32 ohms or more CD DIGITAL OUT (OPTICAL)
Outputs	

<Cassette deck section>

Track format	4 tracks, 2 channels stereo
Frequency response	50 Hz to 8000 Hz
Recording system	AC bias
Heads	Deck 1: Recording / Playback head x 1, erase head x 1 Deck 2: Playback head x 1

<Compact disc player section>

Laser	Semiconductor laser (λ = 780 nm)
D-A converter	1 bit dual
Signal-to-noise ratio	85 dB (1 kHz, 0 dB)
Harmonic distortion	0.05 % (1 kHz, 0 dB)
Wow and flutter	Unmeasurable

<MD recorder section>

Scanning method

Non-contact optical scanner
(Semiconductor laser application)
Magnetic polarity modulation
overwrite system

Recording system

Rotation speed

Sampling frequency

No. of channels

Approx. 400 to 900 rpm (CLV)
44.1kHz

Stereo: 2 channels
Monaural: 1 channel

A-D, D-A converter

Frequency

Wow and flutter

1-bit
20 to 20000 Hz +0.5 to -1.5 dB
Unmeasurable

<General>

Power requirements

Power consumption

Power consumption in standby mode

230 V AC, 50 Hz
95 W
If the power-economizing mode is
ECO OFF: 15 W
If the power-economizing mode is
ECO ON or ECO AUTO: 0.9 W

Dimensions of main unit (W x H x D)

Weight of main unit

260 x 329 x 344 mm

7.2 kg

<Speaker system>

Cabinet type

2 way, bass reflex (magnetic
shielded type)

Speakers

Woofer :
120 mm cone type
Tweeter:
20 mm ceramic type
6 ohms

Impedance

Output sound pressure level

Dimensions

(W x H x D)

Weight

87 dB/W/m
220 x 324 x 204 mm

2.0 kg

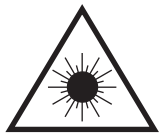
- Design and specifications are subject to change without notice.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

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.



- s Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- s 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 bruksanvising, kan användaren utsättas för osynlig laserstrålning, 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

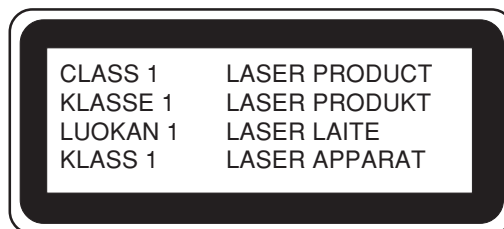
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

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.



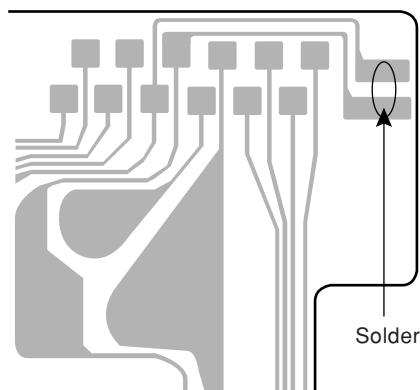
Precaution to replace Optical block

(KSS-213F, KMS-260B)

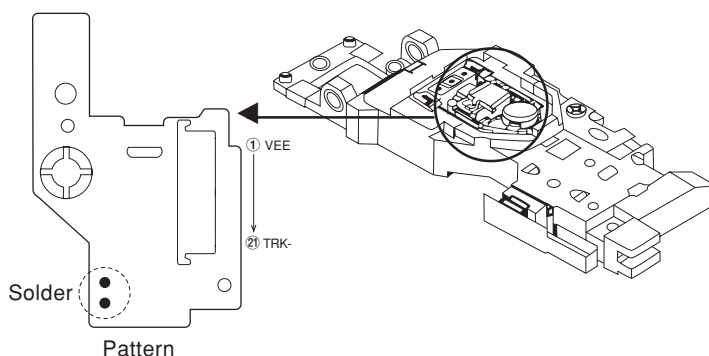
Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

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

CD PICK-UP Assy P.W.B
(KSS-213F)



MD PICK-UP Assy P.W.B
(KMS-260B)



NOTE ON BEFORE STARTING REPAIR

1. Forced discharge of electrolytic capacitor of power supply block

When repair is going to be attempted in the set that uses relay circuit in the power supply block, electric potential is kept charged across the electrolytic capacitors (C101, 102) even though AC power cord is removed. If repair is attempted in this condition, secondary defect can occur.

In order to prevent the secondary trouble, perform the following measures before starting repair work.

Discharge procedure

- ① Remove the AC power cord.
- ② Connect a discharging resistor at an end of lead wire that has clips at both ends. Connect the other end of the lead wire to metal chassis.
- ③ Contact the other end of the discharging resistor to the positive (+) side (+VH) of C101. (For two seconds)
- ④ Contact the same end of the discharging resistor as step ③ to the negative (-) side (-VH) of C102 in the same way. (For two seconds)
- ⑤ Check that voltage across C101 and C102 has decreased to 1 V or less using a multimeter or an oscilloscope.

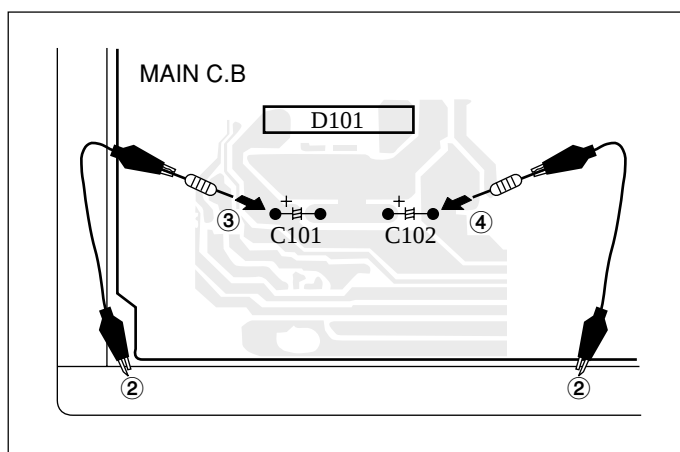


Fig-1

Select a discharging resistor referring to the following table.

Charging voltage (V) (C101, 102)	Discharging resistor (Ω)	Rated power (W)	Parts number
25-48	100	3	87-A00-247-090
49-140	220	5	87-A00-232-090

Note: The reference numbers (C101, C102) of the electrolytic capacitors can change depending on the models. Be sure to check the reference numbers of the charging capacitors on schematic diagram before starting the discharging work.

2. Check items before exchanging the MICROCOMPUTER

Be sure to check the following items before exchanging the MICROCOMPUTER. Exchange the MICROCOMPUTER after confirming that the MICROCOMPUTER is surely defective.

2-1. Regarding the HOLD terminal of the MICROCOMPUTER

When the HOLD terminal (INPUT) of the MICROCOMPUTER is “H”, the MICROCOMPUTER is judged to be operating correctly. When this terminal is “L”, the main power cannot be turned on. Therefore, be sure to check the terminal voltage of the HOLD terminal before exchange.

When the MICROCOMPUTER is not defective, the HOLD terminal can also go “L” when the POWER AMPLIFIER has any abnormalities that triggers the abnormality detection circuit on the MAIN C. B. that sets the HOLD terminal to “L”.

• Good or no good judgement of the MICROCOMPUTER

- ① Turn on the AC main power.
- ② Confirm that the main power is turned on and the HOLD terminal of the MICROCOMPUTER keeps the “H” level or not.
- ③ When the HOLD terminal is “L” level, the abnormality detection circuit is judged to be working correctly and the MICROCOMPUTER is judged to be good.

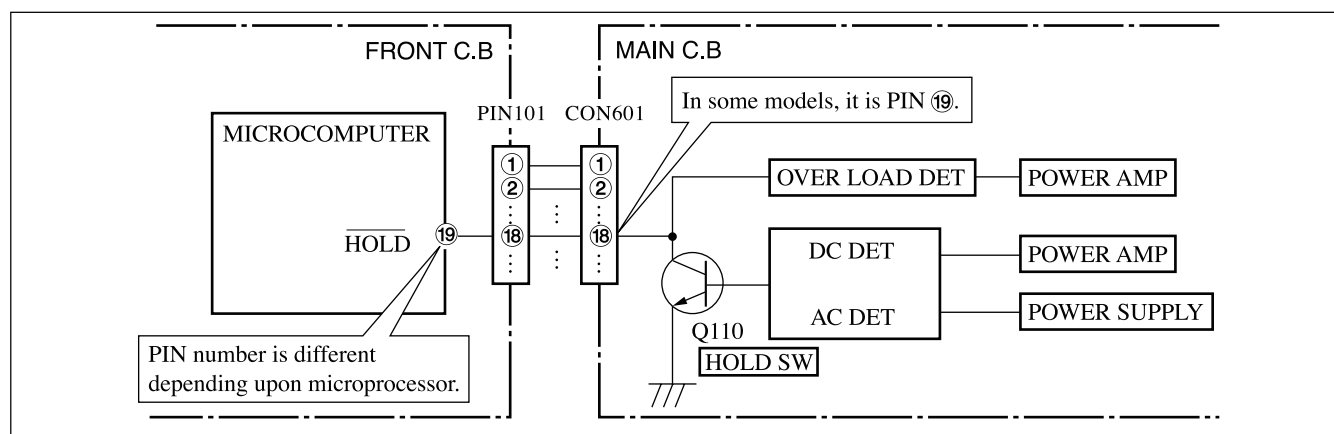


Fig-2-1

In such a case, check also if the POWER AMPLIFIER circuit or power supply circuit has any abnormalities or not.

2-2. Regarding reset

There are cases that the machine does not work correctly because the MICROCOMPUTER is not reset even though the AC power cord is re-inserted, or the software reset (pressing the STOP key + POWER key) is performed.

When the above described phenomenon occurs, it can lead to wrong judgement as if the MICROCOMPUTER is defective and to exchange the MICROCOMPUTER. In such a case, perform the forced-reset by the following procedure and check good or no good of the MICROCOMPUTER.

- ① Remove the AC power cord.

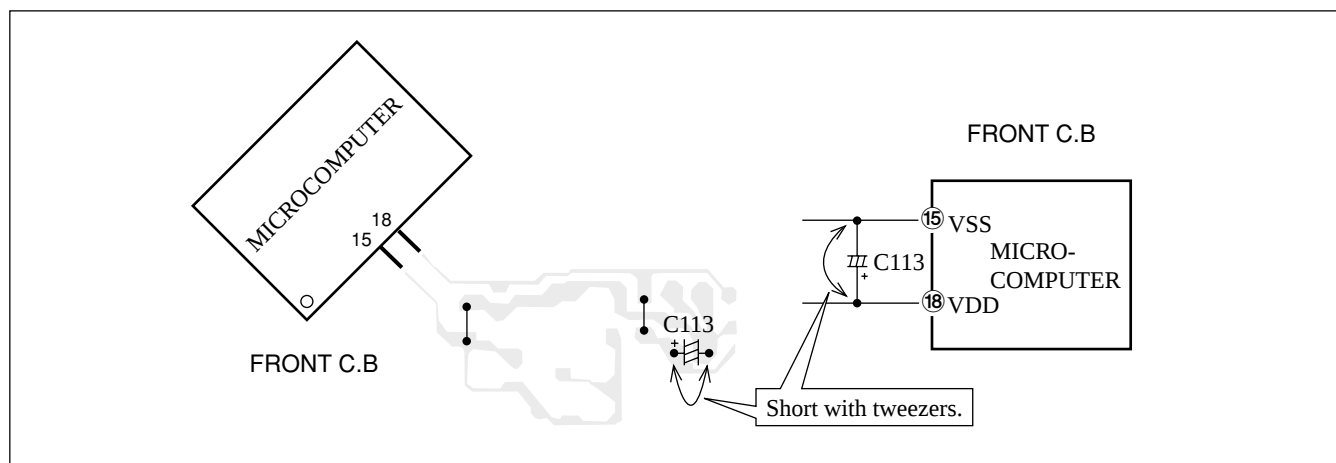


Fig-2-2

- ② Short both ends of the electrolytic capacitor C113 that is connected to VDD of the MICROCOMPUTER with tweezers.
- ③ Connect the AC power cord again. If the MICROCOMPUTER returns to the normal operation, the MICROCOMPUTER is good.

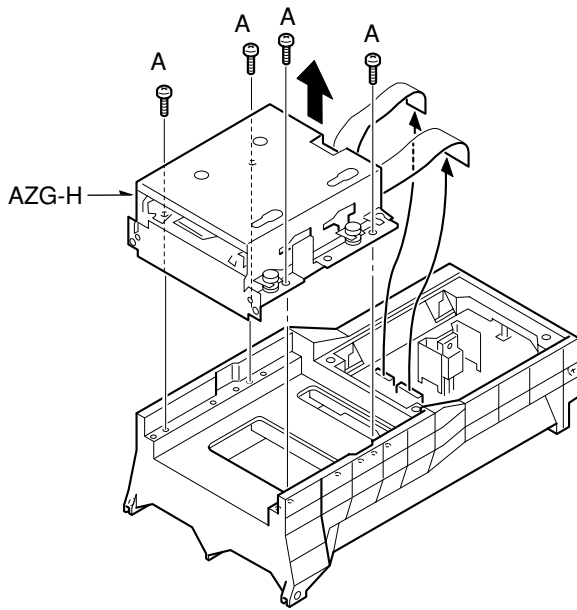
Note: The reference number or MICROCOMPUTER pin number of transistor (Q110) and electrolytic capacitor (C113) can change depending on the models. Be sure to check the reference numbers on schematic diagram before starting the discharging work.

2-3. Confirmation of soldering state of MICROCOMPUTER

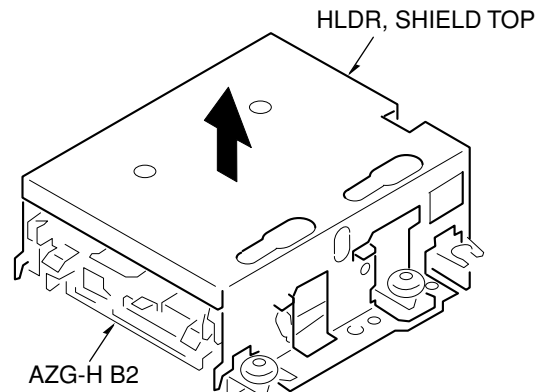
Check the soldering state of the MICROCOMPUTER in addition to the above described procedures. Be sure to exchange the MICROCOMPUTER after surely confirming that the trouble is not caused by poor soldering but the MICROCOMPUTER itself.

DISASSEMBLY INSTRUCTIONS

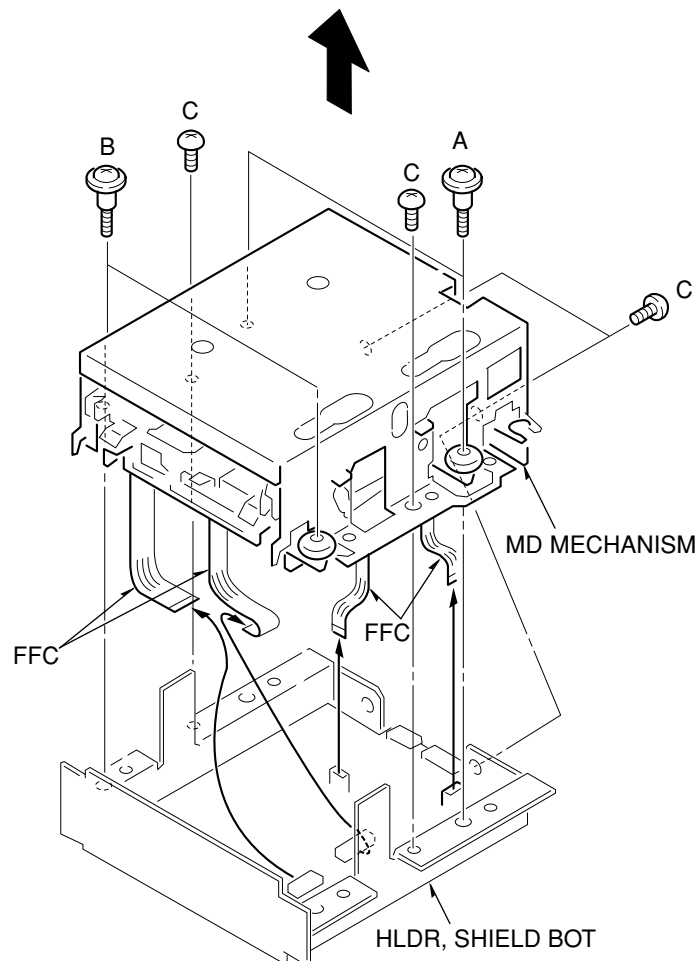
1. Remove the four screws (A) (BVT 2+3-10 W/O SLOT).
Remove the AZG-H in the direction of the arrow.



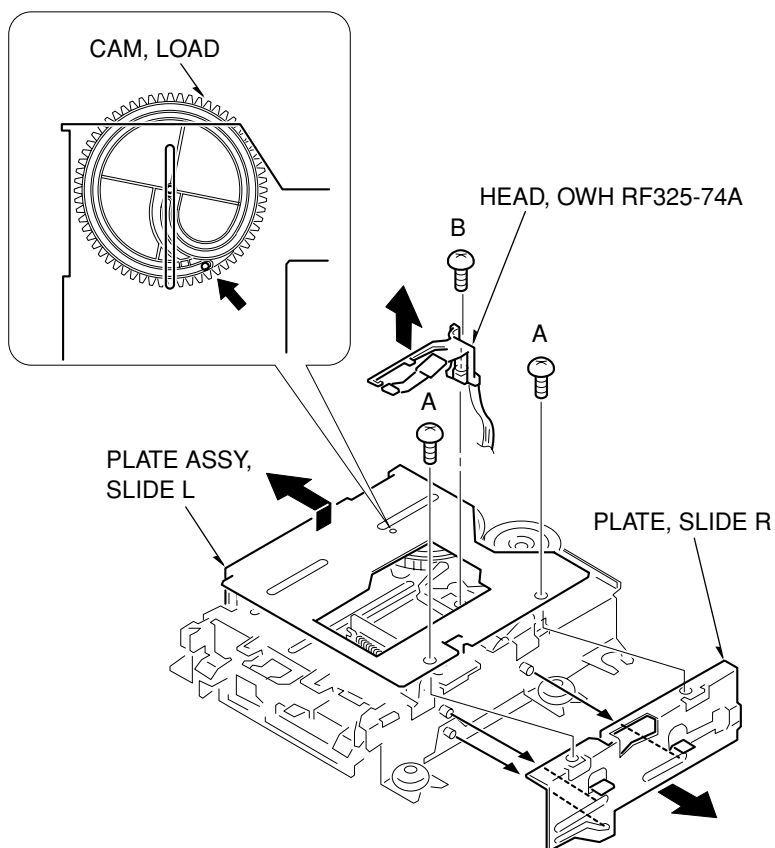
3. Remove the HLDR, SHLD TOP in the direction of the arrow.



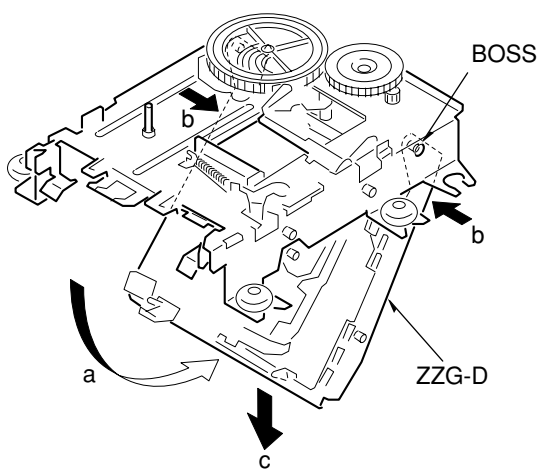
2. Remove the two screws (A) (S-SCREW, MDT), two screws (B) (S-SCREW, MD) and four screws (C) (VTT+3-4).
Remove the four FFCs from the connector, and remove the MD MECHANISM in the direction of the arrow.



4. Remove the two screws (A) (VTT+2-4), and remove the PLATE ASSY, SIDE L and PLATE SIDE R in the direction of the arrow. Remove the screw (B) (VW+1.7-5 W/O MFZN2C), and remove the HEAD and OWH RF325-74A in the direction of the arrow.



5. Open the ZZG-D in the direction of the arrow (a), remove the BOSS by pressing it gently in the direction of the arrow (b), and remove the ZZG-D in the direction of the arrow (c).



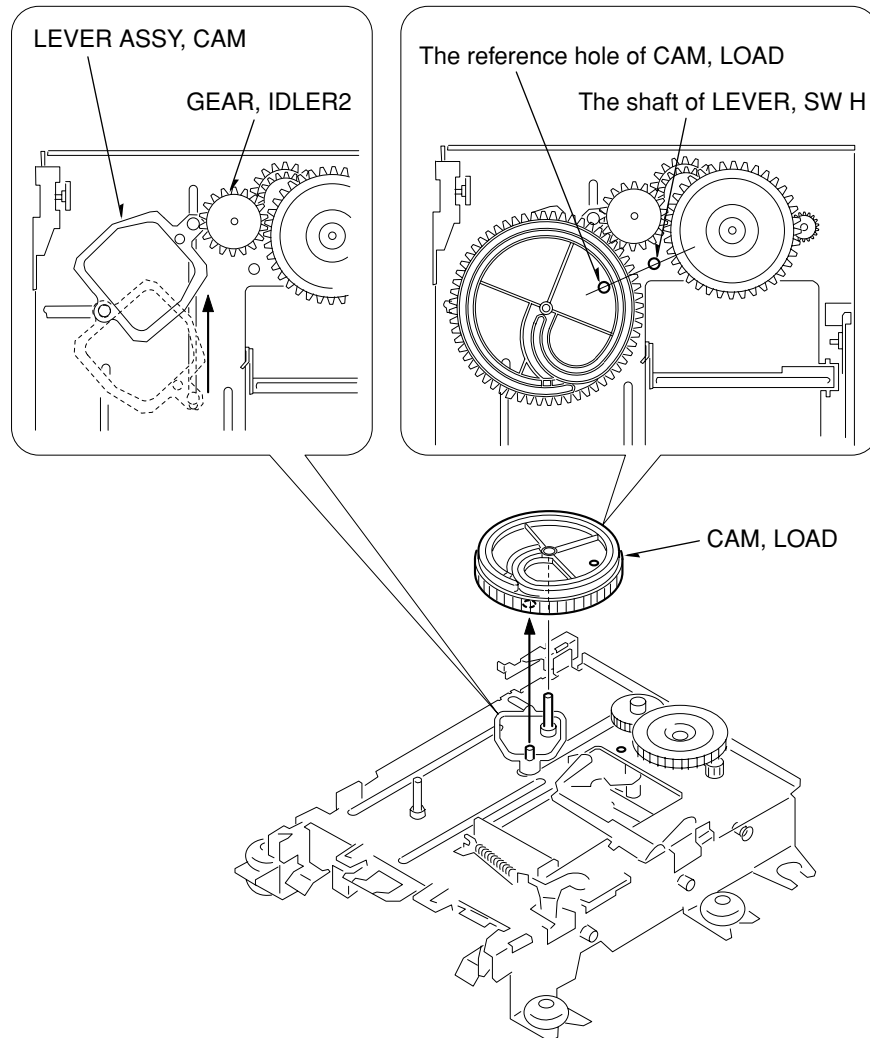
6. Remove the CAM, LOAD in the direction of arrow.

Note During Assembling:

Rotate the gear fully in the direction of the arrow.

Set up the mechanism so that the reference holes of CAM, LOAD are positioned closest to the shaft of LEVER, SW H.

Let the CAM and LOAD engage with the teeth of GEAR, IDLER2.



ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC				C103	87-010-545-080		CAP, ELECT 0.22-50V
	8A-DBA-630-010		C-IC,LC876572V-5R90	C104	87-010-545-080		CAP, ELECT 0.22-50V
	87-A21-482-010		IC,RPM6938-H4	C105	87-010-186-080		CAP,CHIP 4700P
	87-A21-419-040		C-IC,NJM14558MD-TE2	C106	87-010-186-080		CAP,CHIP 4700P
	87-A21-443-040		C-IC,M62495AFP	C107	87-010-403-080		CAP, ELECT 3.3-50V
	87-A21-560-010		IC,LA1844L-A	C108	87-010-403-080		CAP, ELECT 3.3-50V
	87-A20-440-040		C-IC,BU1920FS	C109	87-012-156-080		C-CAP,S 220P-50 CH
	87-070-127-110		IC,LC72131 D	C110	87-012-156-080		C-CAP,S 220P-50 CH
TRANSISTOR				C111	87-010-260-080		CAP, ELECT 47-25V
	87-026-609-080		TR,KTA1266GR	C112	87-010-260-080		CAP, ELECT 47-25V
	89-213-702-010		TR,2SB1370E	C113	87-A10-946-080		C-CAP,S 220P-100 CH
	87-026-610-080		TR,KTC3198GR	C114	87-A10-946-080		C-CAP,S 220P-100 CH
	87-A30-076-080		C-TR,2SC3052F	C119	87-010-197-080		CAP, CHIP 0.01 DM
	87-A30-075-080		C-TR,2SA1235F	C120	87-010-197-080		CAP, CHIP 0.01 DM
	87-A30-107-070		C-TR,CMBT5401	C123	87-010-184-080		C-CAP,S 3300P-50 K B C2012
	87-A30-484-080		C-TR,KRA102S	C124	87-010-184-080		C-CAP,S 3300P-50 K B C2012
	87-A30-190-080		TR,CC5551	C125	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A30-209-010		TR,2SD1889	C126	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A30-208-010		TR,2SB1340	C127	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A30-490-080		C-TR,KRC107S	C128	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A30-106-040		C-TR,CMBT5551	C129	87-010-190-080		C-CAP,S 0.01-50 Z F C2012
	87-A30-087-080		C-FET,2SK2158	C130	87-010-190-080		C-CAP,S 0.01-50 Z F C2012
	87-A30-091-080		FET,2SJ460	C133	87-010-186-080		CAP,CHIP 4700P
	87-A30-090-080		FET,2SK2541	C140	87-010-182-080		C-CAP,S 2200P-50 B
	87-A30-062-080		C-TR,KRC104S	C301	87-010-179-080		CAP,CHIP S B1200P
	87-A30-318-080		TR,CSA952K	C302	87-010-179-080		CAP,CHIP S B1200P
	87-A30-086-040		C-TR,CSD1306E	C303	87-010-178-080		C-CAP,S 1000P-50 K B C2012
	89-333-317-880		TR,2SC3331 (T/U)	C304	87-010-178-080		C-CAP,S 1000P-50 K B C2012
	87-A30-234-080		TR,CSC4115BC	C307	87-010-263-080		CAP, ELECT 100-10V
	89-327-143-080		C-TR,2SC27140	C308	87-010-263-080		CAP, ELECT 100-10V
	87-A30-489-080		C-TR,KRA107S	C309	87-010-318-080		C-CAP,S 47P-50 CH
	89-503-602-080		C-FET,2SK360E	C310	87-010-318-080		C-CAP,S 47P-50 CH
DIODE				C311	87-010-598-080		CHIP-CAP,S 0.068-16
	87-020-465-080		DIODE,1SS133 (110MA)	C312	87-010-598-080		CHIP-CAP,S 0.068-16
	87-A40-393-090		DIODE,1N5402GW (F20)	C313	87-010-188-080		C-CAP,S 6800P-50 B
	87-A40-553-080		DIODE,1N4003 LES	C314	87-010-188-080		C-CAP,S 6800P-50 B
	87-A40-777-080		ZENER,UZ30BSB	C315	87-010-263-080		CAP, ELECT 100-10V
	87-A40-764-080		ZENER,UZ10BSC	C317	87-010-546-080		CAP, ELECT 0.33-50V
	87-A40-270-080		C-DIODE,MC2838	C318	87-010-546-080		CAP, ELECT 0.33-50V
	87-A40-748-080		ZENER,UZ5.6BSA	C320	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A40-739-080		ZENER,UZ2.7BSA	C321	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-017-149-080		ZENER,HZS6A2L	C325	87-010-196-080		CHIP CAPACITOR,0.1-25
MAIN C.B				C326	87-010-196-080		C-CAP,S 0.1-25
C9	87-010-196-080		CHIP CAPACITOR,0.1-25	C327	87-010-196-080		CHIP CAPACITOR,0.1-25
C10	87-010-196-080		CHIP CAPACITOR,0.1-25	C360	87-010-401-080		CAP, ELECT 1-50V
C11	87-010-196-080		CHIP CAPACITOR,0.1-25	C365	87-010-196-080		CHIP CAPACITOR,0.1-25
C12	87-010-196-080		CHIP CAPACITOR,0.1-25	C399	87-012-140-080		CAP 470P
C21	87-A10-520-000		CAP,E 3300-35 M SMG	C401	87-010-544-080		CAP, ELECT 0.1-50V
C25	87-010-408-080		CAP, ELECT 47-50V	C402	87-010-544-080		CAP, ELECT 0.1-50V
C26	87-010-408-080		CAP, ELECT 47-50V	C403	87-010-321-080		CHIP CAPACITOR,82P (J)
C30	87-010-393-080		CAP, ELECT 100-35V	C404	87-010-321-080		CHIP CAPACITOR,82P (J)
C31	87-010-263-080		CAP, ELECT 100-10V	C405	87-010-197-080		CAP, CHIP 0.01 DM
C32	87-010-197-080		CAP, CHIP 0.01 DM	C406	87-010-197-080		CAP, CHIP 0.01 DM
C34	87-010-260-080		CAP, ELECT 47-25V	C407	87-010-197-080		CAP, CHIP 0.01 DM
C35	87-010-406-080		CAP, ELECT 22-50	C408	87-010-197-080		CAP, CHIP 0.01 DM
C36	87-010-381-080		CAP, ELECT 330-16V	C409	87-010-182-080		CAP,CHIP S 2200P
C38	87-010-190-080		S CHIP F 0.01	C410	87-010-182-080		CAP,CHIP S 2200P
C50	87-010-393-080		CAP, ELECT 100-35V	C411	87-010-405-080		CAP, ELECT 10-50V
C60	87-010-403-080		CAP, ELECT 3.3-50V	C412	87-010-405-080		CAP, ELECT 10-50V
C61	87-010-260-080		CAP, ELECT 47-25V	C452	87-010-382-080		CAP, ELECT 22-25V
C72	87-016-051-000		CAP,E 2200-35 M SMG	C453	87-010-183-080		C-CAP,S 2700P-50 B
C101	87-010-189-080		C-CAP,S 8200P-50 B	C454	87-010-183-080		C-CAP,S 2700P-50 B
C102	87-010-189-080		C-CAP,S 8200P-50 B	C455	87-010-183-080		C-CAP,S 2700P-50 B
				C456	87-010-197-080		CAP, CHIP 0.01 DM
				C458	87-010-178-080		CHIP CAP 1000P
				C459	87-010-175-080		CAP 560P
				C460	87-010-196-080		CHIP CAPACITOR,0.1-25
				C461	87-012-158-080		C-CAP,S 390P-50 CH
				C462	87-012-158-080		C-CAP,S 390P-50 CH
				C470	87-A11-104-080		CAP,TC U 470P-50 J CH

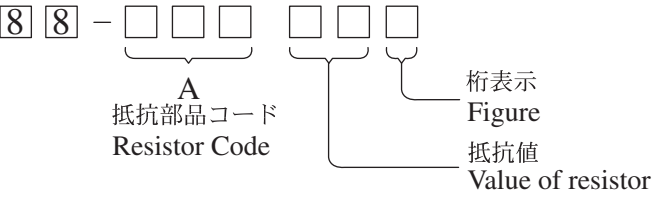
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C605	87-010-181-080		CAP,CHIP S 1800P	C876	87-010-405-080		CAP, ELECT 10-50V
C606	87-010-181-080		CAP,CHIP S 1800P	C877	87-010-197-080		CAP, CHIP 0.01 DM
C609	87-010-213-080		C-CAP,S 0.015-25 B	C878	87-010-316-080		C-CAP,S 33P-50
C610	87-010-213-080		C-CAP,S 0.015-25 B	C879	87-010-314-080		C-CAP,S 22P-50
C611	87-010-545-080		CAP, ELECT 0.22-50V	C884	87-010-197-080		CAP, CHIP 0.01 DM
C612	87-010-545-080		CAP, ELECT 0.22-50V	C887	87-016-081-080		C-CAP,S 0.1-16 B
C613	87-010-545-080		CAP, ELECT 0.22-50V	C888	87-016-081-080		C-CAP,S 0.1-16 B
C614	87-010-545-080		CAP, ELECT 0.22-50V	C890	87-010-197-080		CAP, CHIP 0.01 DM
C615	87-010-154-080		CAP CHIP 10P	C892	87-010-314-080		C-CAP,S 22P-50V
C616	87-010-370-080		CAP,E 330-6.3 SME	C897	87-010-197-080		CAP, CHIP 0.01 DM
C617	87-010-370-080		CAP,E 330-6.3 SME	C898	87-010-198-080		CAP, CHIP 0.022
C618	87-010-405-080		CAP, ELECT 10-50V	C940	87-010-197-080		CAP, CHIP 0.01 DM
C630	87-016-669-080		C-CAP,S 0.1-25 K B	C942	87-010-149-080		C-CAP,S 5P-50 CH
C677	87-010-197-080		CAP, CHIP 0.01 DM	C947	87-010-197-080		CAP, CHIP 0.01 DM
C678	87-010-197-080		CAP, CHIP 0.01 DM	C948	87-012-140-080		C-CAP,S 470P-50
C771	87-010-263-080		CAP, ELECT 100-10V	C952	87-010-197-080		CAP, CHIP 0.01 DM
C772	87-010-197-080		CAP, CHIP 0.01 DM	C957	87-010-311-080		C-CAP,S 12P-50
C779	87-010-971-080		C-CAP,S 4700P-50	C958	87-010-197-080		CAP, CHIP 0.01 DM
C780	87-010-971-080		C-CAP,S 4700P-50	C959	87-010-196-080		CHIP CAPACITOR,0.1-25
C782	87-010-197-080		CAP, CHIP 0.01 DM	C960	87-010-196-080		CHIP CAPACITOR,0.1-2
C783	87-010-197-080		CAP, CHIP 0.01 DM	C962	87-010-401-080		CAP,E 1-50 M 11L SME
C784	87-010-197-080		CAP, CHIP 0.01 DM	C963	87-015-785-080		CHIP CAPACITOR, 0.1-25Z
C785	87-010-197-080		CAP, CHIP 0.01 DM	C971	87-010-381-080		CAP, ELECT 330-16V
C786	87-010-197-080		CAP, CHIP 0.01 DM	C972	87-010-404-080		CAP, ELECT 4.7-50V
C788	87-010-149-080		C-CAP,S 5P-50 CH	C973	87-010-197-080		CAP, CHIP 0.01 DM
C789	87-A10-801-080		C-CAP,S 0.022-16	C974	87-010-197-080		CAP, CHIP 0.01 DM
C790	87-A10-801-080		C-CAP,S 0.022-16	C979	87-010-322-080		C-CAP,S 100P-50 CH
C791	87-010-196-080		CHIP CAPACITOR,0.1-25	C981	87-010-260-080		CAP, ELECT 47-25V
C792	87-010-197-080		CAP, CHIP 0.01 DM	C982	87-010-196-080		CHIP CAPACITOR,0.1-25
C793	87-010-404-080		CAP, ELECT 4.7-50V	C983	87-010-197-080		CAP, CHIP 0.01 DM
C794	87-012-155-080		C-CAP,S 180P-50	C984	87-010-197-080		CAP, CHIP 0.01 DM
C795	87-010-197-080		CAP, CHIP 0.01 DM	C985	87-010-322-080		C-CAP,S 100P-50
C796	87-010-197-080		CAP, CHIP 0.01 DM	C987	87-010-197-080		CAP, CHIP 0.01 DM
C797	87-010-405-080		CAP, ELECT 10-50V	C989	87-010-197-080		CAP, CHIP 0.01 DM
C798	87-010-197-080		CAP, CHIP 0.01 DM	C991	87-010-312-080		C-CAP,S 15P-50 CH
C799	87-010-407-080		CAP, ELECT 33-50V	C992	87-010-312-080		C-CAP,S 15P-50 CH
C800	87-012-369-080		C-CAP,S 0.047-50F	C993	87-010-178-080		CHIP CAP 1000P
C801	87-010-403-080		CAP, ELECT 3.3-50V	C995	87-010-178-080		CHIP CAP 1000P
C802	87-012-369-080		C-CAP,S 0.047-50F	C997	87-010-196-080		CHIP CAPACITOR,0.1-25
C803	87-010-198-080		CAP, CHIP 0.022	C998	87-010-260-080		CAP, ELECT 47-25V
C804	87-010-263-080		CAP, ELECT 100-10V	C999	87-A11-155-080		CAP,TC U 0.01-16 Z F
C807	87-010-400-080		CAP, ELECT 0.47-50V	CF831	87-008-423-010		FILTER,CF SFE10.7MS3G-A
C808	87-010-401-080		CAP, ELECT 1-50V	CF832	82-785-747-010		CF,MS2 GHY,R
C809	87-010-401-080		CAP, ELECT 1-50V	CN103	8A-NFA-636-010		CONN ASSY,9P MECHA-R
C810	87-010-196-080		CHIP CAPACITOR,0.1-25	CN301	87-A60-620-010		CONN,3P V 2MM JMT
C814	87-010-197-080		CAP, CHIP 0.01 DM	CN351	87-A60-625-010		CONN,8P V 2MM JMT
C815	87-010-400-080		CAP, ELECT 0.47-50V	CN601	87-099-719-010		CONN,30P TYK-B(X)
C816	87-010-400-080		CAP, ELECT 0.47-50V	CN603	87-A60-056-010		CONN,12P V 9604S-12C
C818	87-010-180-080		C-CAP,S 1500P-50	CNA1	8A-NF8-652-010		CONN ASSY,7P TID-A(480)
C821	87-010-405-080		CAP, ELECT 10-50V	CON351	8A-NFA-634-010		CONN ASSY,8P RPB
C823	87-012-349-080		C-CAP,S 1000P-50	FB301	87-008-372-080		FLTR,EMI BL01 RN1
C824	87-010-404-080		CAP, ELECT 4.7-50V	FB303	87-008-474-080		F-BEAD,BL02RN1-R62T2 EMI
C825	87-010-596-080		C-CAP,S 0.047-16	FB603	87-A91-882-010		F-BEAD,FSOC250RT1
C831	87-010-406-080		CAP, E 22-50 M 11L SME	FFC603	88-912-151-110		FF-CABLE,12P 1.25
C842	87-010-197-080		CAP, CHIP 0.01 DM	FFE831	A8-6ZA-19C-170		6ZA-1 YFEENC
C844	87-010-197-080		CAP, CHIP 0.01 DM	J101	87-A60-602-010		JACK,DIA6.3 BLK ST W/SW TC
C850	87-010-260-080		CAP, ELECT 47-25V	J103	87-A60-238-010		TERMINAL,SP 4P (MSC)
C851	87-010-197-080		CAP, CHIP 0.01 DM	J105	87-A60-547-010		JACK,PIN 4P R/W/B
C852	87-010-197-080		CAP, CHIP 0.01 DM	J602	87-A60-881-010		JACK,PIN 2P MSP 242V05 PBSN
C853	87-010-197-080		CAP, CHIP 0.01 DM	J832	87-A60-403-010		TERMINAL,ANT PAL 2P HSP-312V05
C858	87-010-196-080		CHIP CAPACITOR,0.1-25	JW622	87-008-372-080		FLTR,EMI BL01 RN1
C859	87-010-196-080		CHIP CAPACITOR,0.1-25	L101	87-A50-610-010		COIL,1UH K(MDEC)
C860	87-010-197-080		CAP, CHIP 0.01 DM	L102	87-A50-610-010		COIL,1UH K(MDEC)
C869	87-010-197-080		CAP, CHIP 0.01 DM	L451	87-007-342-010		COIL,OSC 85KHZ BIAS
C870	87-010-178-080		CHIP CAP 1000P	L801	87-A50-608-010		COIL,FM DET-N(TOK)
C871	87-012-156-080		C-CAP,S 220P-50 CH	L802	87-A91-551-010		FLTR,PCFJZH-450 L (TOK)
C872	87-012-156-080		C-CAP,S 220P-50 CH	L811	87-005-847-080		COIL,2.2UHK CECS
C873	87-012-140-080		C-CAP,S 470P-50	L832	87-005-847-080		COIL,2.2UHK CECS
C874	87-010-405-080		CAP, ELECT 10-50V	L861	87-005-847-080		COIL,2.2UHK CECS
C875	87-010-196-080		CHIP CAPACITOR,0.1-25	L941	87-A50-020-010		COIL,ANT LW(COI) 252KHZ

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
L942	87-A50-019-010		COIL,OSC LW(COI) 856KHZ	S403	87-A91-024-180		SW, TACT KSHG0611BT
L951	8A-NF8-668-010		COIL,AM PACK 2 (TOK)	S404	87-A91-024-180		SW, TACT KSHG0611BT
R129	87-A00-258-080		RES,M/F 0.22-1W J	S405	87-A91-024-180		SW, TACT KSHG0611BT
R130	87-A00-258-080		RES,M/F 0.22-1W J	S406	87-A91-024-180		SW, TACT KSHG0611BT
R605	87-012-393-080		C-CAP,S0.22-16 KB	S407	87-A91-024-180		SW, TACT KSHG0611BT
R991	87-010-322-080		C-CAP,S 100P-50 CH	S408	87-A91-024-180		SW, TACT KSHG0611BT
R993	87-010-322-080		C-CAP,S 100P-50 CH	S409	87-A91-024-180		SW, TACT KSHG0611BT
R995	87-010-322-080		C-CAP,S 100P-50 CH	S410	87-A91-024-180		SW, TACT KSHG0611BT
TC942	87-011-253-080		TRIMMER,CER 30P 4.0X4.5 ECRLA	S411	87-A91-024-180		SW, TACT KSHG0611BT
TH101	87-A91-042-080		C-THMS,100K 55001	S412	87-A91-024-180		SW, TACT KSHG0611BT
TH102	87-A91-042-080		C-THMS,100K 55001	S413	87-A91-024-180		SW, TACT KSHG0611BT
WH1	87-A90-460-010		HLD R, WIRE 2.5-7P	S414	87-A91-024-180		SW, TACT KSHG0611BT
X861	87-A70-091-010		VIB,XTAL 4.332MHZ CSA-309	S415	87-A91-024-180		SW, TACT KSHG0611BT
X991	87-A70-061-010		VIB,XTAL 4.500MHZ CSA-309	S416	87-A91-024-180		SW, TACT KSHG0611BT
				S417	87-A91-024-180		SW, TACT KSHG0611BT
FRONT C.B				S418	87-A91-024-180		SW, TACT KSHG0611BT
C101	87-012-369-080		C-CAP,S 0.047-50F	S419	87-A91-024-180		SW, TACT KSHG0611BT
C151	87-012-369-080		C-CAP,S 0.047-50F	S420	87-A91-024-180		SW, TACT KSHG0611BT
C201	87-012-156-080		C-CAP,S 220P-50 CH	S421	87-A91-024-180		SW, TACT KSHG0611BT
C202	87-012-156-080		C-CAP,S 220P-50 CH	S422	87-A91-024-180		SW, TACT KSHG0611BT
C203	87-010-322-080		C-CAP,S 100P-50 CH	S423	87-A91-024-180		SW, TACT KSHG0611BT
C204	87-010-322-080		C-CAP,S 100P-50 CH	S424	87-A91-024-180		SW, TACT KSHG0611BT
C205	87-010-322-080		C-CAP,S 100P-50 CH	S425	87-A91-024-180		SW, TACT KSHG0611BT
C206	87-010-322-080		C-CAP,S 100P-50 CH	S426	87-A91-024-180		SW, TACT KSHG0611BT
C207	87-010-322-080		C-CAP,S 100P-50 CH	S427	87-A91-024-180		SW, TACT KSHG0611BT
C208	87-010-322-080		C-CAP,S 100P-50 CH	S428	87-A91-024-180		SW, TACT KSHG0611BT
C209	87-010-322-080		C-CAP,S 100P-50 CH	S429	87-A91-024-180		SW, TACT KSHG0611BT
C210	87-012-156-080		C-CAP,S 220P-50 CH	S430	87-A91-024-180		SW, TACT KSHG0611BT
C211	87-012-140-080		CAP 470P	S501	87-A91-024-180		SW, TACT KSHG0611BT
C214	87-010-318-080		C-CAP,S 47P-50 CH	SFR601	87-024-431-080		SFR, 3.3K H RH063MC
C216	87-010-196-080		CHIP CAPACITOR,0.1-25				
C217	87-010-196-080		CHIP CAPACITOR,0.1-25	PT C.B			
C218	87-010-322-080		C-CAP,S 100P-50 CH	C1	87-010-387-080		CAP,E 470-25 SME
C219	87-010-322-080		C-CAP,S 100P-50 CH	C2	87-A11-148-080		CAP,TC U 0.1-50 Z F
C220	87-010-322-080		C-CAP,S 100P-50 CH	CN1	87-A61-109-010		CONN,7P V TID-A
C221	87-012-156-080		C-CAP,S 220P-50 CH	△ PT1	8A-DBA-622-010		PT,ADB-A EZK
C222	87-012-156-080		C-CAP,S 220P-50 CH	△ PT2	8A-NF8-662-010		PT,SUB ANF-8 (E)
C223	87-A10-189-040		CAP,E 220-10	△ RY2	87-A90-976-010		RELAY,AC12V SDT-S-112LMR
C225	87-010-196-080		CHIP CAPACITOR,0.1-25	△ T1	87-A60-317-010		TERMINAL, 1P MSC
C226	87-010-178-080		CHIP CAP 1000P	△ T2	87-A60-317-010		TERMINAL, 1P MSC
C227	87-010-178-080		CHIP CAP 1000P				
C228	87-010-178-080		CHIP CAP 1000P	HEAD FLEX C.B			
C231	87-012-155-080		C-CAP 180P-50CH	CON301	8A-NFA-633-010		CONN ASSY,3P(PH)
C232	87-010-312-080		C-CAP,S 15P-50 CH	PH	S6-201-070-260		P.HEAD P-5044BD-24F
C233	87-010-322-080		C-CAP,S 100P-50 CH	SW9	S6-403-020-040		SLIDE SWITCH R663167
C235	87-010-196-080		CHIP CAPACITOR,0.1-25				
C291	87-010-378-040		CAP,E 10-16				
C301	87-010-182-080		C-CAP,S 2200P-50 B				
C351	87-016-083-080		C-CAP,S 0.15-16 K R				
C352	87-010-213-080		C-CAP,S 0.015-50 B				
C401	87-010-197-080		CAP, CHIP 0.01 DM				
C453	87-010-408-040		CAP,E 47-50 SME				
C454	87-012-369-080		C-CAP,S 0.047-50F				
C455	87-010-404-040		CAP,E 4.7-50 SME				
C456	87-010-404-040		CAP,E 4.7-50 SME				
C601	87-010-384-040		CAP,E 100-25 SME				
CN101	87-099-720-010		CONN,30P TYK-B(P)				
CN151	87-A60-054-010		CONN,14P V 9604S-14C				
CN601	87-A60-673-010		CONN,9P H 2MM JMT				
CN651	87-A60-060-010		CONN,07P V 9604S-07C				
FFC151	88-914-271-110		FF-CABLE,14P 1.25				
FFC651	88-907-251-110		FF-CABLE,7P 1.25				
FL451	8A-DBA-610-010		FL,11-BT-177GNK				
L201	87-A50-333-010		COIL,OSC 9.43MHZ				
LED321	87-A40-589-040		LED,SLR-56VCT31 RED				
S271	87-A91-645-010		SW,RTRY EC12E24304NON-CLICK				
S272	87-A91-710-010		SW,RTRY 1-2-12 RE012103PV2B25F				
S401	87-A91-024-180		SW, TACT KSHG0611BT				
S402	87-A91-024-180		SW, TACT KSHG0611BT				

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

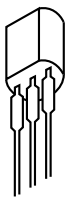
Chip Resistor Part Coding



チップ抵抗
Chip resistor

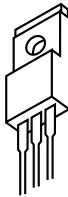
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code : A
				外形／Form	L	W	t	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION



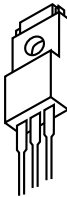
E C B

KTA1266
KTC3198
CSC4115
CSA952



B C E

2SB1370
2SB1340



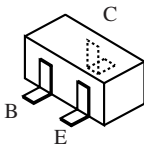
E C B

2SD1889



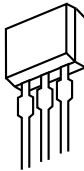
E C B

CC5551
2SC3331



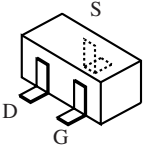
2SA1235
2SC2714
2SC3052
2SK2158
CMBT5401
CMBT5551

CSD1306E
KRA102
KRA107
KRC104
KRC107



S D G

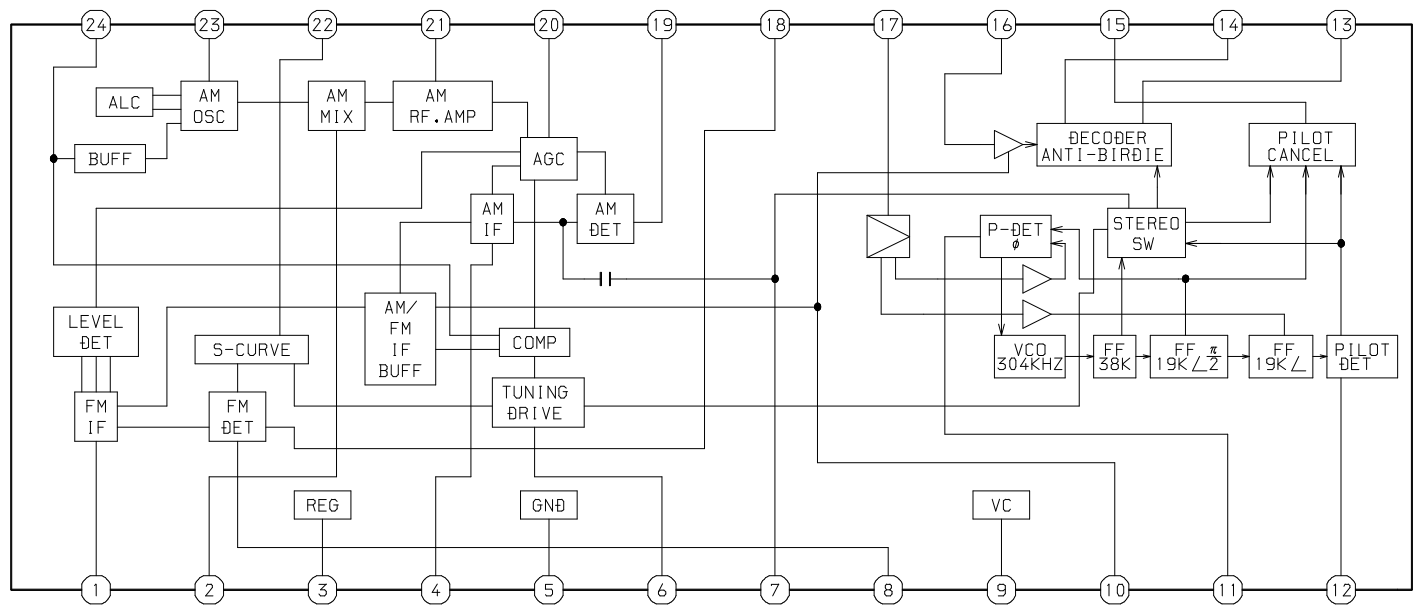
2SJ460
2SK2541



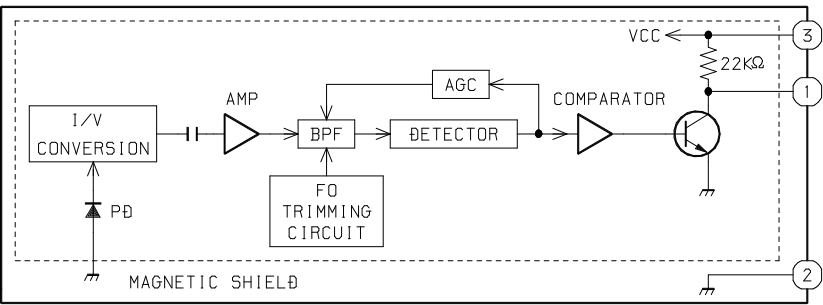
2SK360E

IC BLOCK DIAGRAM

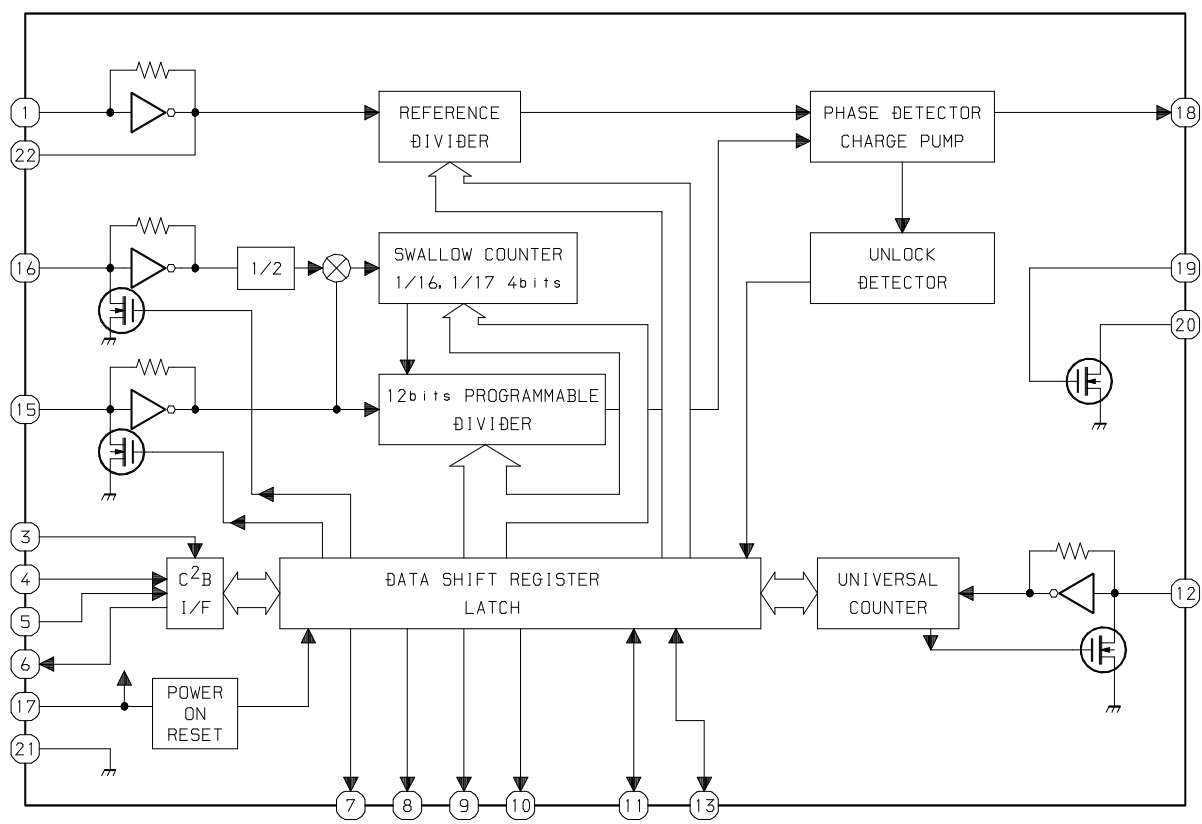
IC, LA1844L-A



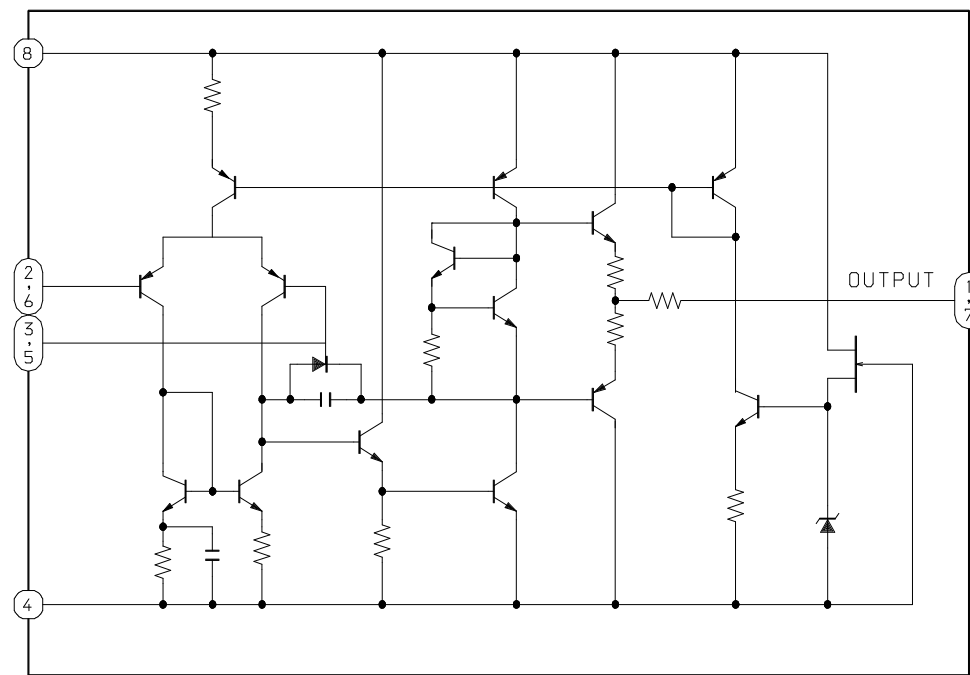
IC, RPM6938-H4



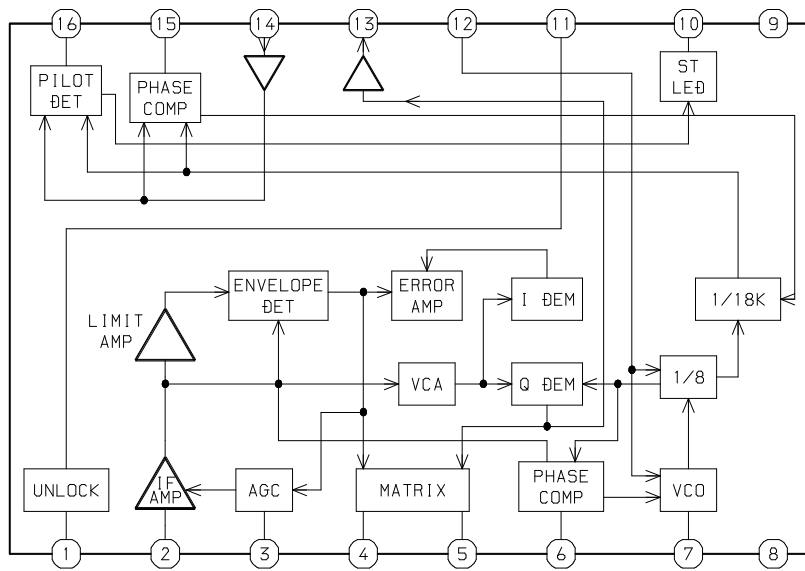
IC, LC72131D



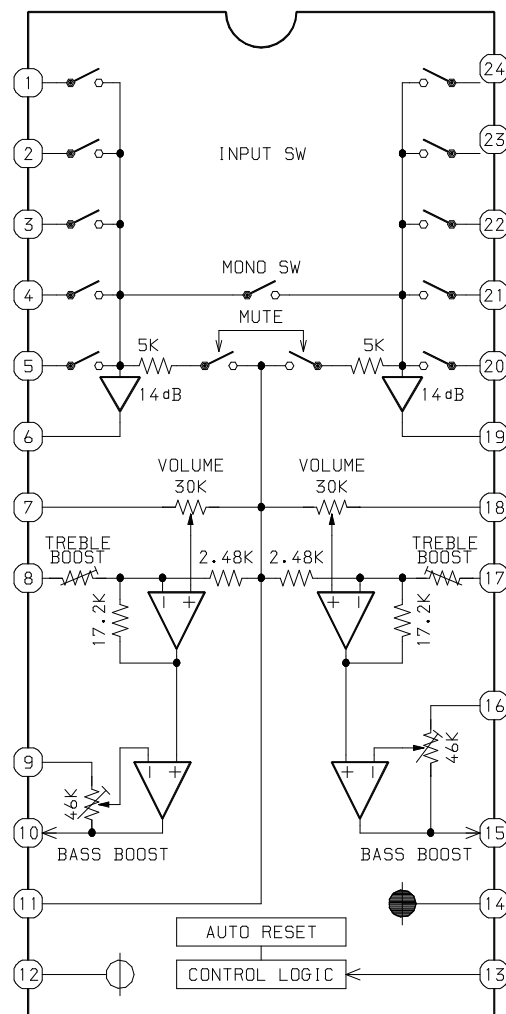
IC, NJM14558MD-TE2

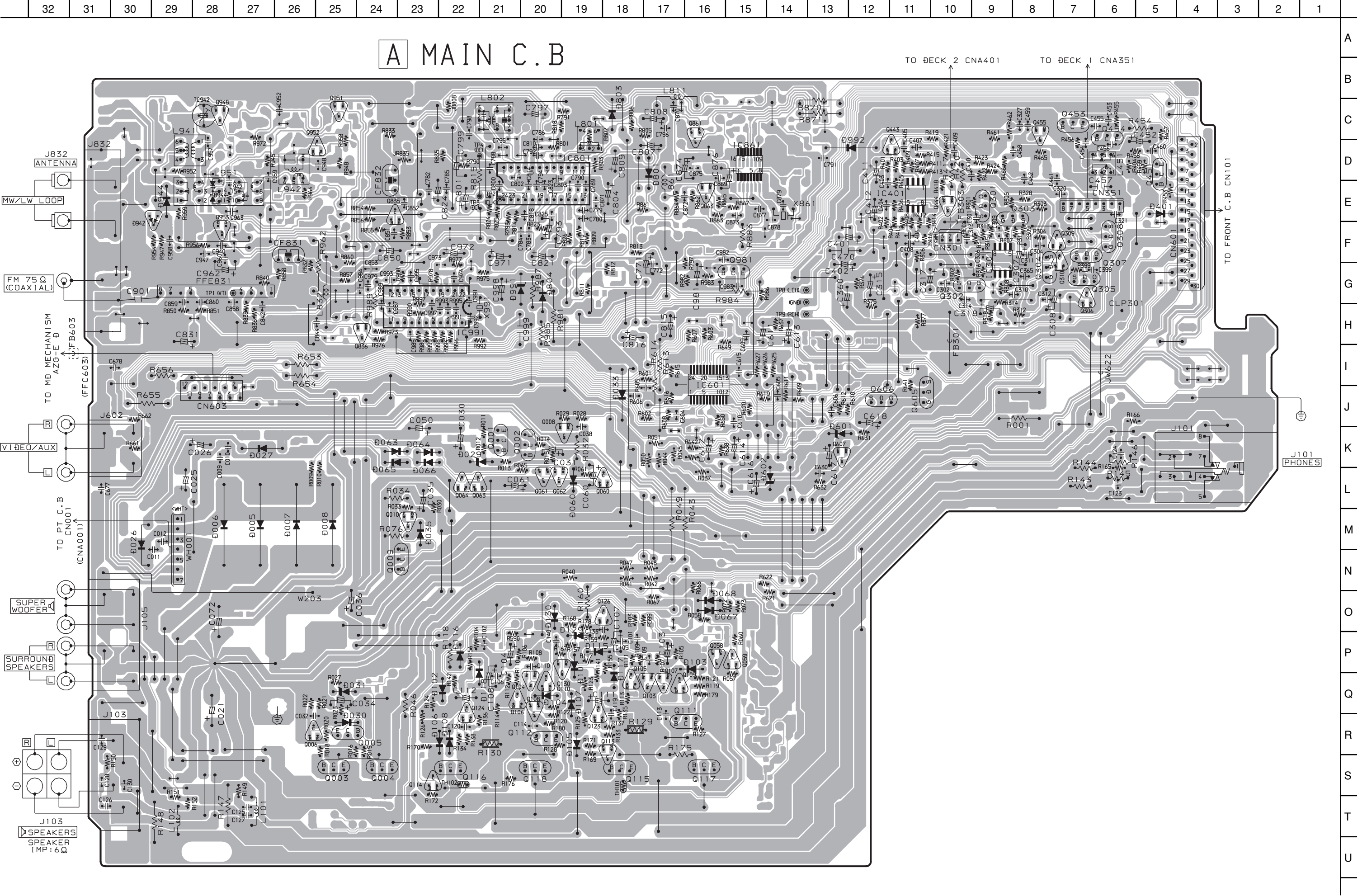


IC, TA2040AF

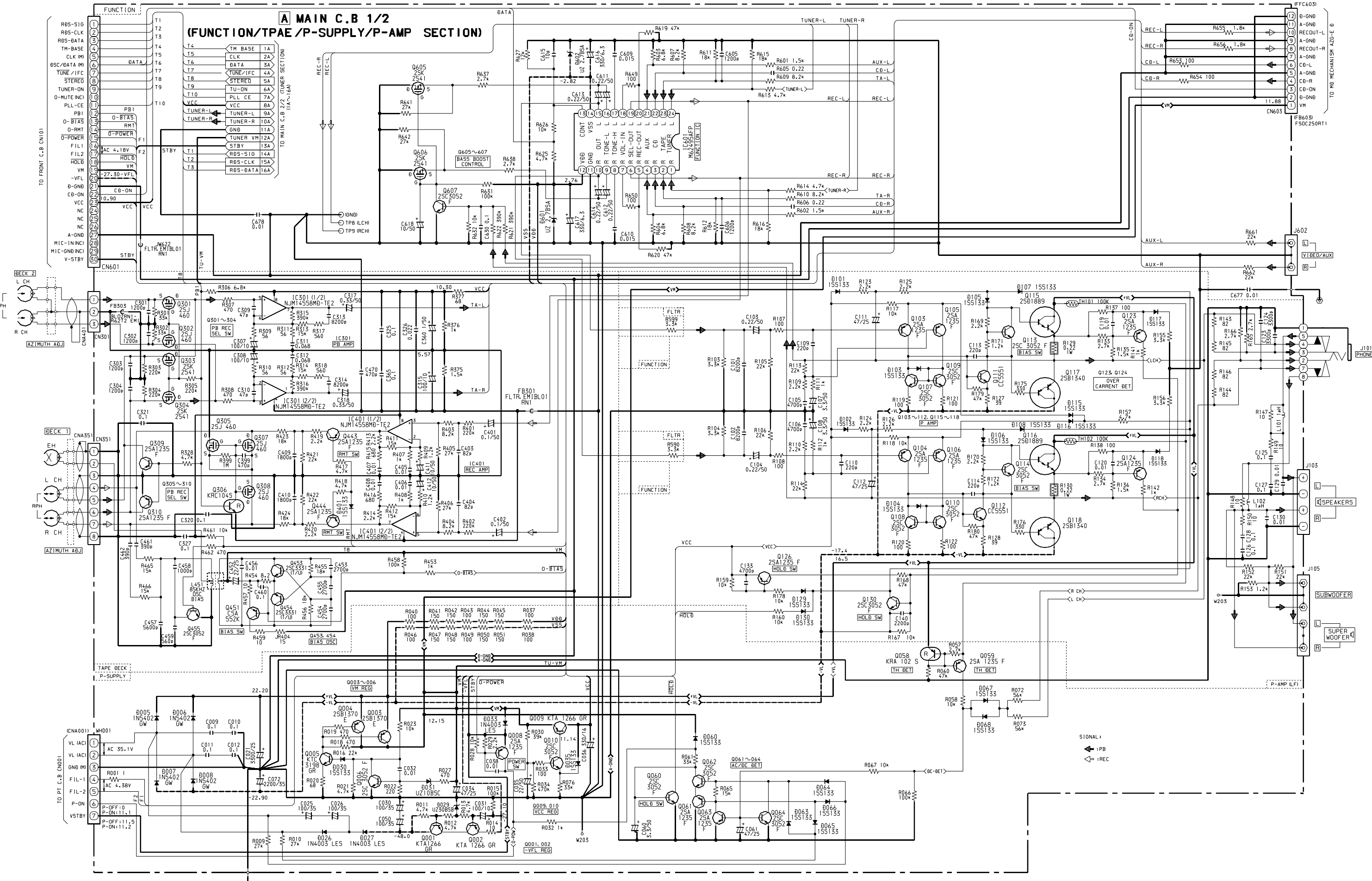


IC, M62495AFP

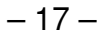


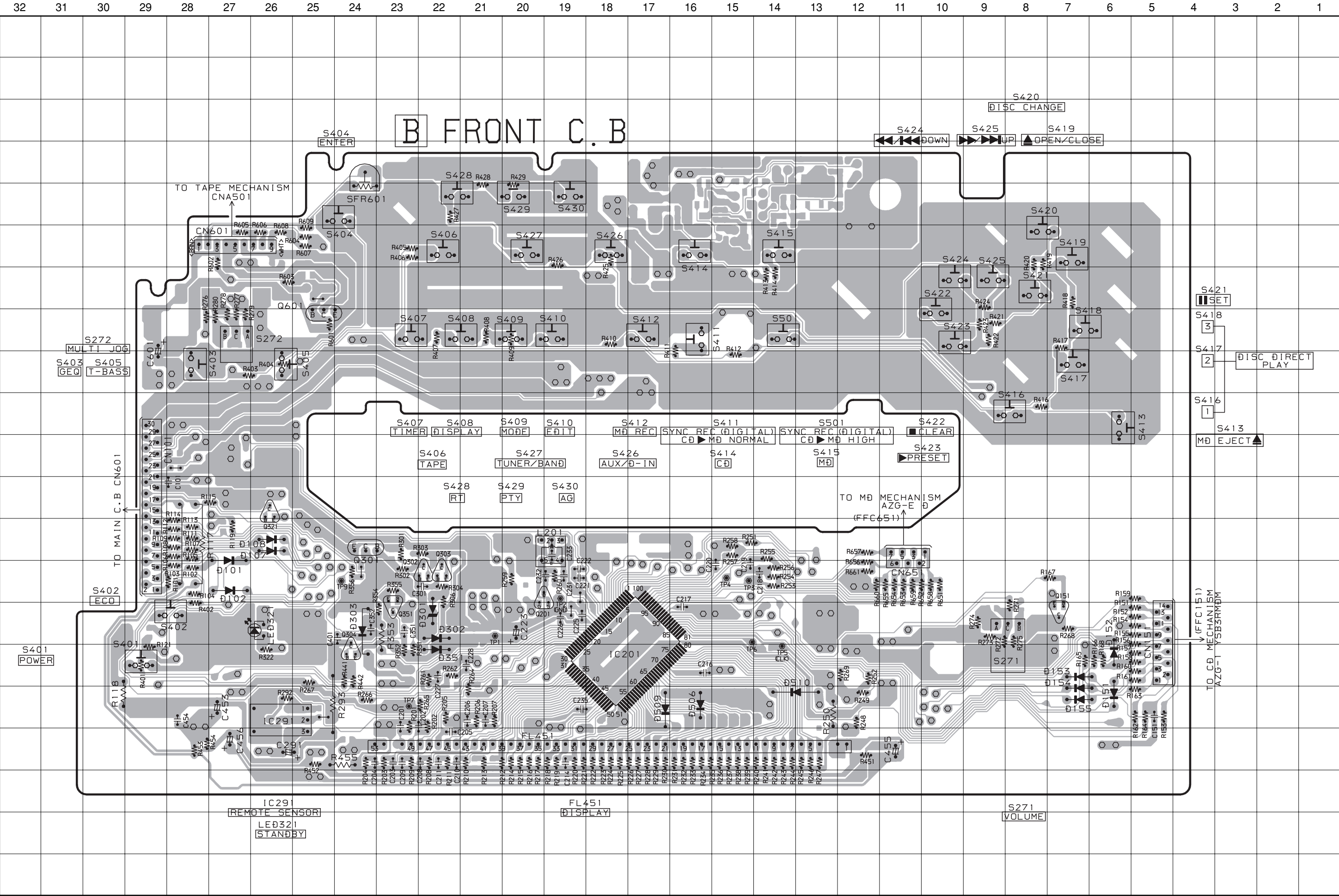


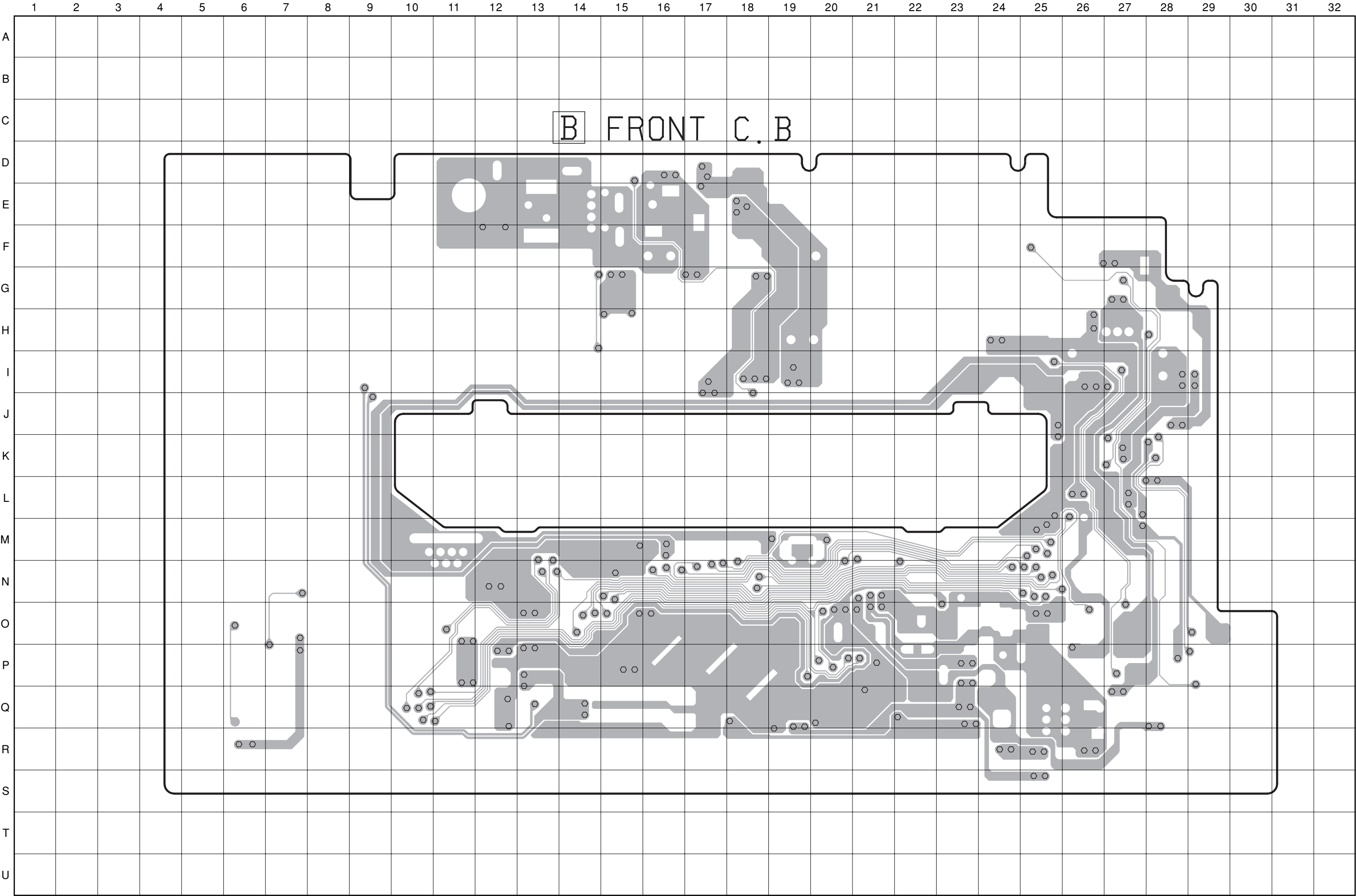
SCHEMATIC DIAGRAM – 1 (MAIN 1 / 2 : FUNCTION / TAPE / P - SUPPLY / P - AMP SECTION)



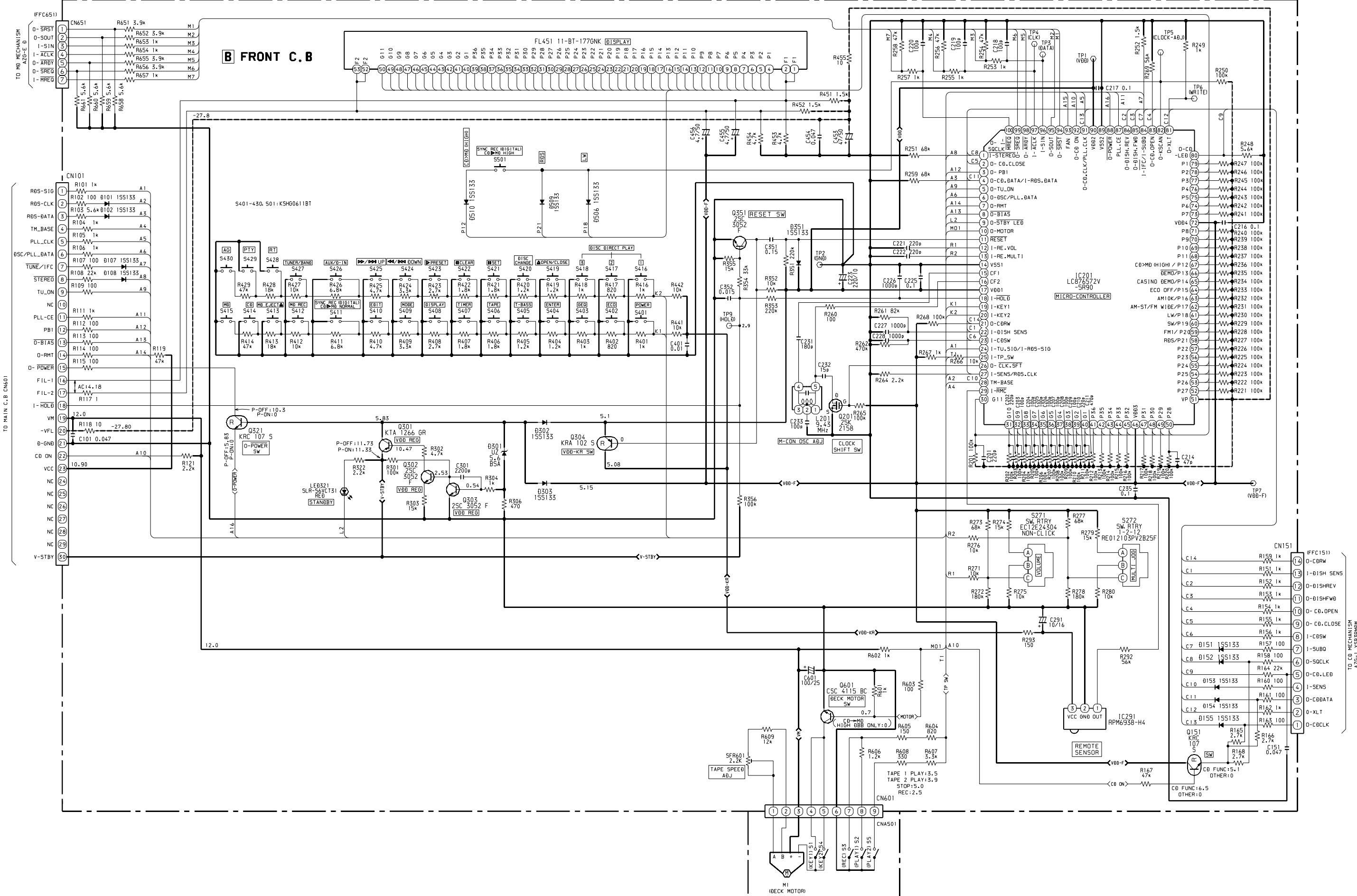
TO MAIN C-B 1/2 (1A~16A)



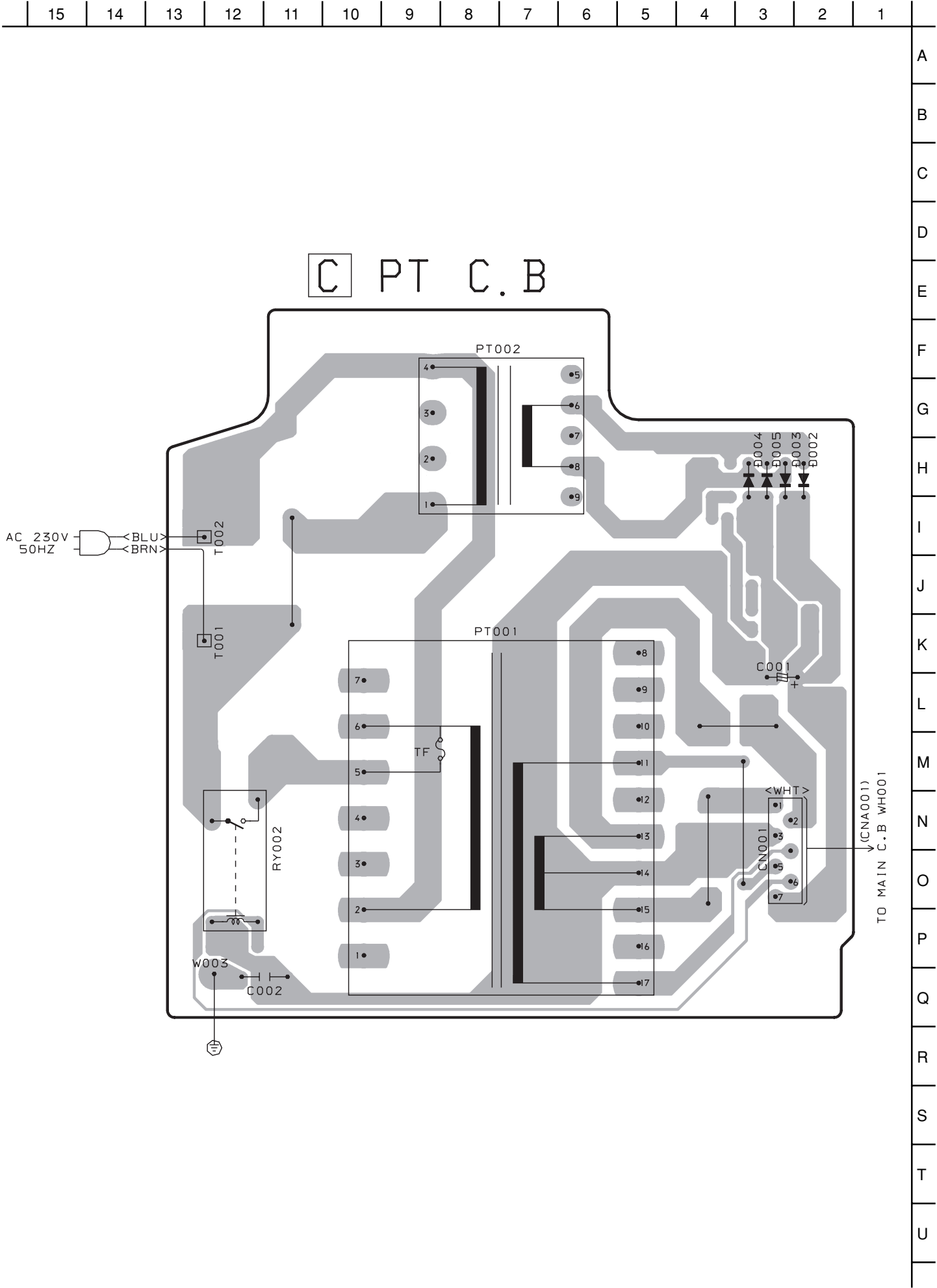




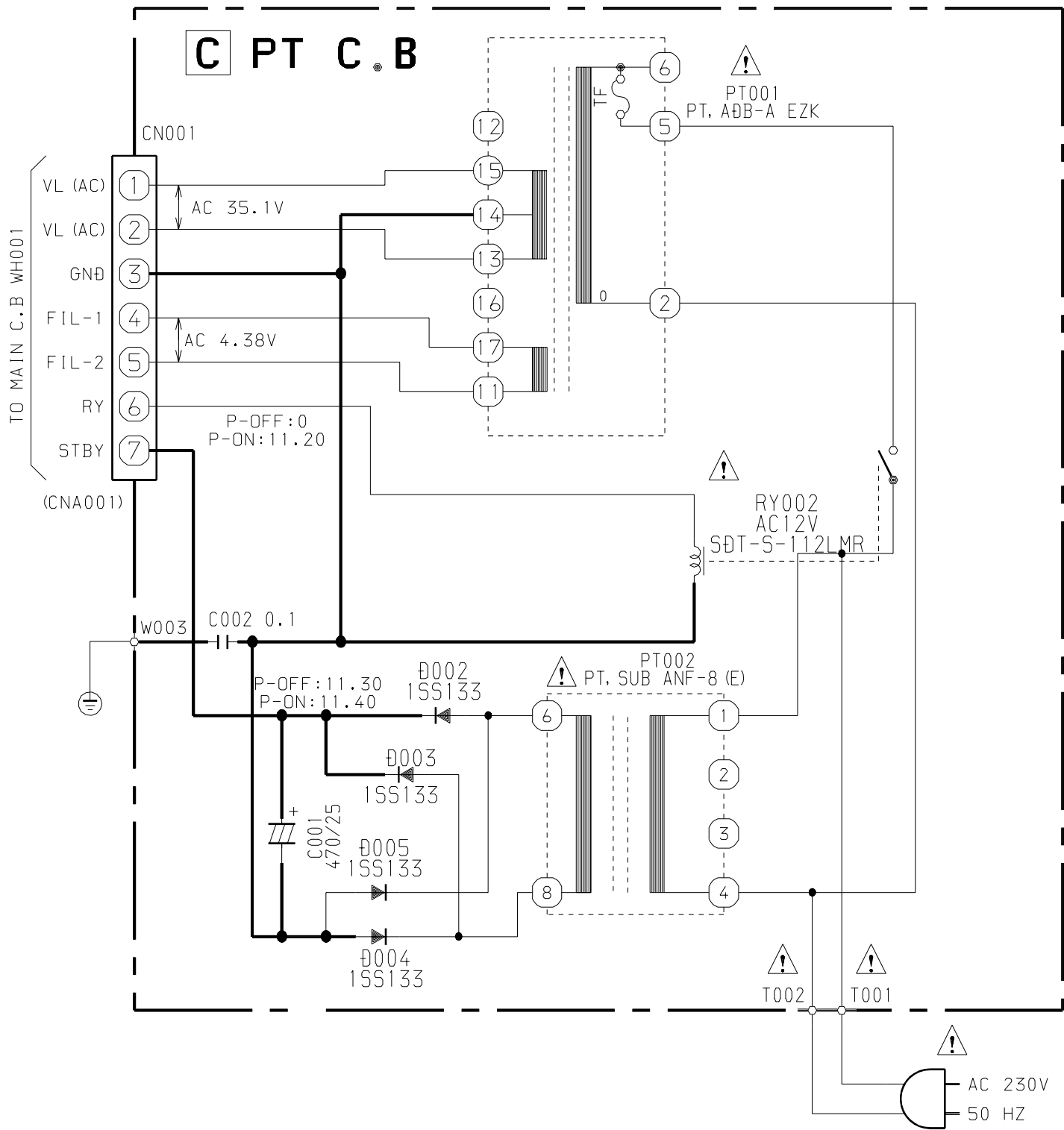
SCHEMATIC DIAGRAM – 3 (FRONT)



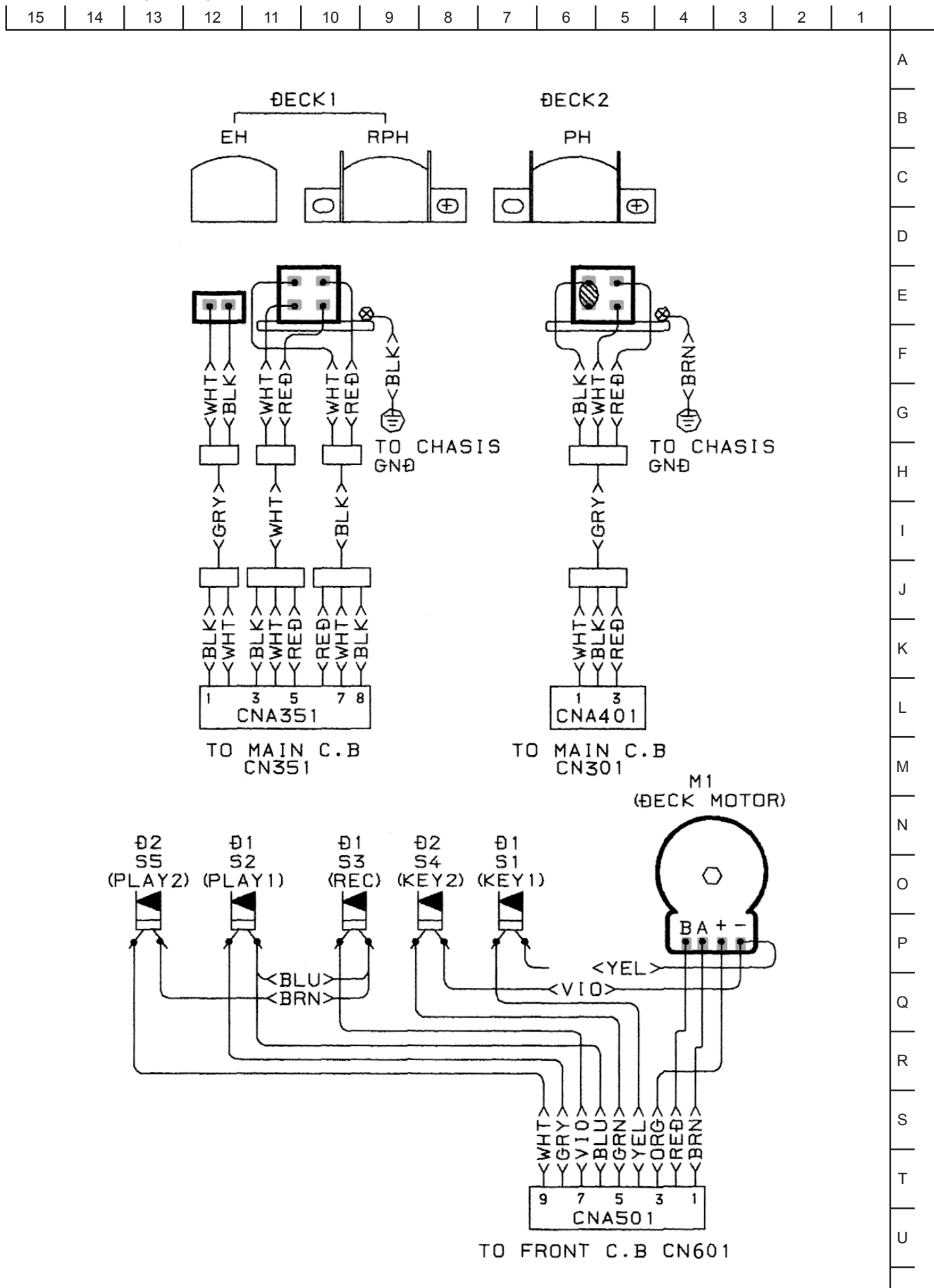
WIRING – 3 (PT)



SCHEMATIC DIAGRAM – 4 (PT)

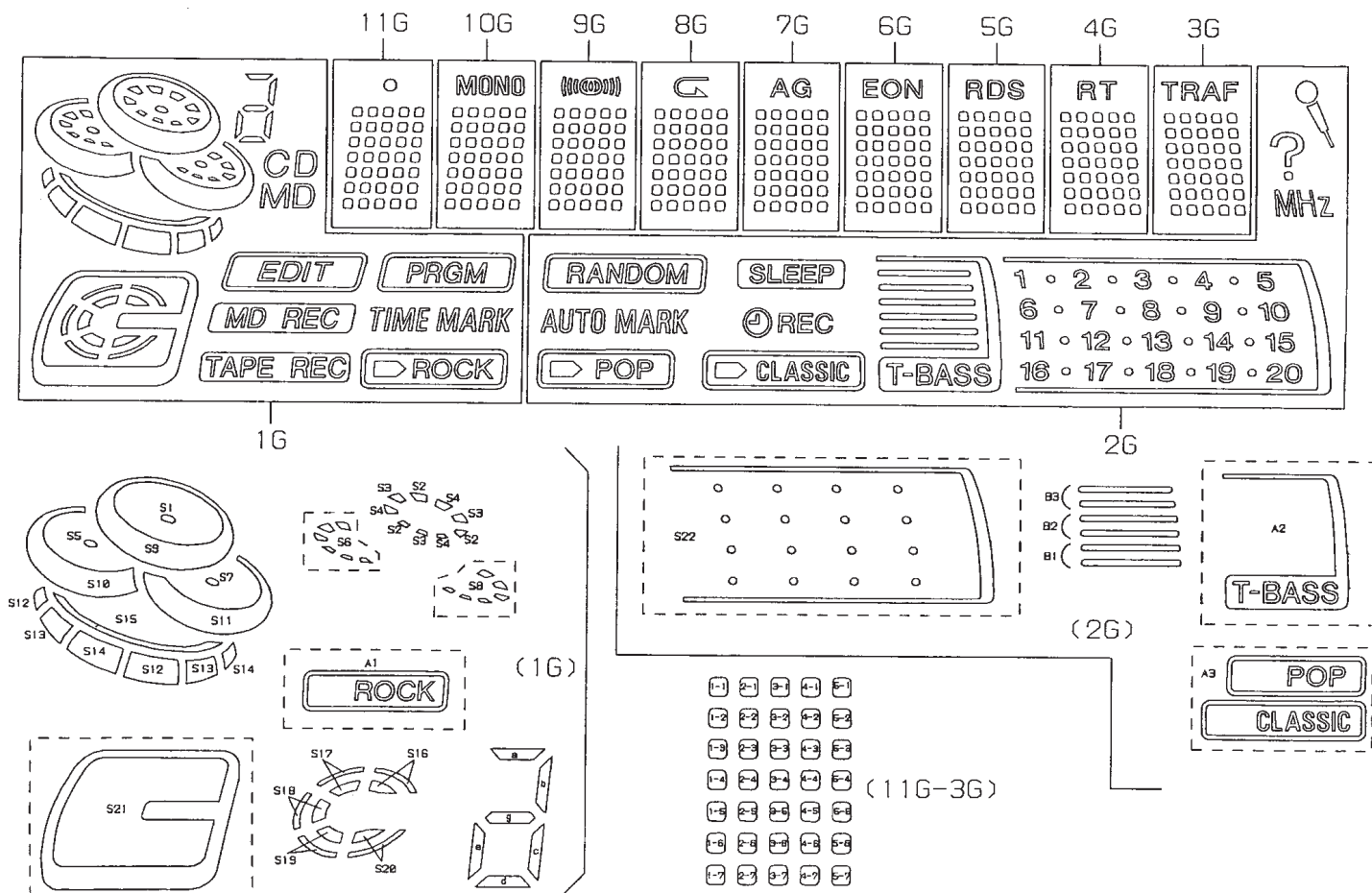


WIRING - 4 (DECK)



FL (11- BT -177GNK) GRID ASSIGNMENT & ANODE CONNECTION & PIN CONNECTION

GRID ASSIGNMENT



ANODE CONNECTION

[illegible]

PIN CONNECTION

[illegible]

NOTE 1) F1,F2 --- Filament
2) NP ----- No pin
3) DL ----- Datum Line
4) 1G~11G --- Grid

IC DESCRIPTION

IC, LC876572V-5R90

Pin No.	Pin Name	I/O	Description
1	O-SQCLK/I-STEREO	O/I	Output SQCLK/Input tuner stereo detection.
2	O-CD.CLOSE	O	Output CD tray close.
3	O-PB1	O	Output deck 1/2 switching.
4	O-CD.DATA/ I-RDS DATA	O/I	Output for CD data/Input for RDS data detection.
5	O-TU_ON	O	Output tuner ON.
6	O-DSC/PLL.DATA	O	Output data for LED driver, tuner IC and function IC.
7	O-RMT	O	Output REC mute.
8	O-BIAS	O	Output deck bias.
9	O-STBY LED	O	Output for stadby LED (Active L).
10	O-MOTOR	O	Output deck motor.
11	RESET	I	Reset input.
12	I-RE.VOL	I	Input rotary encoder (VOL).
13	I-RE.MULTI	I	Input rotary encoder (MULTI).
14	VSS1	-	GND.
15	CF1	I	Oscillator input for system clock (9.43MHz).
16	CF2	O	Oscillator output for system clock (9.43MHz).
17	VDD1	-	Power supply.
18	I-HOLD	I	Input power failure detection AD.
19	I-KEY1	I	Input KEY-1 AD.
20	I-KEY2	I	Input KEY-2 AD.
21	O-CDRW	O	Output for CD read/write.
22	I-DIS SENS	I	Input for CD turn table photo sensor.
23	I-CDSW	I	Input CD mecha switch.
24	I-TU.SIG/I-RDS.SIG	I	Input tuner/RDS signal.
25	I-TP_SW	I	Input deck mecha switch.
26	O-CLK.SET	O	Output for micro controller clock shift.
27	I-SENS/RDS.CLK	I	Input photo sensor/RDS clock.
28	TM-BASE	I	Input clock base.
29	I-RMC	I	Input remote control signal (Active L).
30 ~ 40	G11 ~ G1	O	Output FL grid (G11~G1).
41 ~ 45	P36 ~ P32	O	Output FL segment (P36~P32).
46	VDD3	-	VDD for FL.
47 ~ 50	P31 ~ P28	O	Output FL segment (P31~P28).
51	VP	-	-VFL.
52 ~ 57	P27 ~ P22	O	Output FL segment (P27~P22).
58	RDS/P21	I/O	Input for RDS diode/Output FL segment (P21).
59	FM1/P20	I/O	Input for FM1 (OIRT) DIODE (Not used)/Output FL segment (P20).
60	SW/P19	I/O	Input for SW diode (Not used)/Output FL segment (P19).
61	LW/P18	I/O	Input for LW diode/Output FL segment (P18).
62	AM-ST/FM/ WIDE/P17	I/O	Input for AM stereo/FM wide diode (Not used)/Output FL segment (P17).

Pin No.	Pin Name	I/O	Description
63	AM10K/P16	I/O	Input for AM10K diode (Not used)/Output FL segment (P16).
64	ECO OFF/P15	I/O	Input for ECO OFF diode/Output FL segment (P15).
65	CASINO DEMO/P14	I/O	Input for CASINO DEMO diode/Output FL segment (P13).
66	$\overline{\text{DEMO}}$ /P13	I/O	Input for DEMO diode/Output FL segment (P13).
67	CD>MD (HIGH)/P12	I/O	Input for CD>MD (HIGH) diode/Output FL segment (P12).
68~71	P11~P8	O	Output FL segment (P11~P8).
72	VDD4	-	VDD for FL.
73~79	P7~P1	O	Output FL segment (P7~P1).
80	O-CD-LED	O	Output CD flash window LED ON/OFF.
81	O-XLT	O	Output latch.
82	O-KSCAN	O	Output key scan timing.
83	O-CD.OPEN	O	Output CD tray open.
84	I-IFC/I-SUBQ	I	Input tuner IFC/CD SUBQ detection.
85	O-DISH.FWD	O	Output turn CD table to forward.
86	O-DISH.REV	O	Output turn CD table to reverse.
87	PLL.CE	O	Output tuner PLL chip enable.
88	$\overline{\text{O-POWER}}$	O	Output system power ON/OFF.
89	VSS2	-	GND.
90	VDD2	-	VDD for back up.
91	O-CD.CLK/PLL.CLK	O	Output CD clock/PLL clock enable.
92	O-CD ON	O	Output CD ON.
93	FAN	O	Output fan control (Not used).
94	$\overline{\text{O-SRST}}$	O	Output MD SRST (Active L).
95	O-SOUT	O	Output MD SOUT.
96	I-SIN	I	Input MD SIN.
97	$\overline{\text{I-ACLK}}$	I	Input MD ACLK (Active L).
98	$\overline{\text{O-ARDY}}$	O	Output MD ARDY (Active L).
99	$\overline{\text{O-SREQ}}$	O	Output MD SREQ (Active L).
100	$\overline{\text{I-MREQ}}$	I	Input MD MREQ (Active L).

ADJUSTMENT (TUNER / FRONT / DECK)

< TUNER SECTION >

1. Clock Frequency Check
Settings : • Test point : TP2 (CLK)
Method : Set to MW 1602kHz and check that the test point is 2052kHz $\pm$ 45Hz.
2. MW VT Check
Settings : • Test point : TP4 (VT)
Method : Set to MW 1602kHz and check that the test point is less than 8.0V. Then set to MW 531kHz and check that the test point is more than 0.6V.
3. MW Tracking Adjustment
Settings : • Test point : TP8 (Lch), TP9 (Rch)
• Adjustment location : L951
Method : Set to MW 999kHz and adjust L951 so that the test point becomes maximum.
4. LW VT Adjustment
Settings : • Test point : TP4 (VT)
• Adjustment location : L942
Method : Set to LW 144kHz and adjust L942 so that the test point becomes 1.3V $\pm$ 0.05V.
Then set to LW 290kHz and check that the test point is less than 8.0V.
5. LW Tracking Adjustment
Settings : • Test point : TP8 (Lch), TP9 (Rch)
• Adjustment location :
L941 144kHz
TC942 290kHz
Method : Set up TC942 to center before adjustment.
The level at 144kHz is adjusted to maximum by L941. Then the level at 290kHz is adjusted to maximum by TC942.
6. AM IF Adjustment
Settings : • Test point : TP8 (Lch), TP9 (Rch)
• Adjustment location :
L802 450kHz
7. FM VT Check
Settings : • Test point : TP4 (VT)
Method : Set to FM 108.0MHz and check that the test point is less than 8.0V. Then set to FM 87.5 MHz and check that the test point is more than 0.5V.
8. FM Tracking Check
Settings : • Test point : TP8 (Lch), TP9 (Rch)
Method : Set to FM 98.0MHz and check that the test point is less than 13dB μ V.
9. DC Balance / Mono Distortion Adjustment
Settings : • Test point : TP3,TP4 (DC balance)
TP8 (Lch), TP9 (Rch) (Distortion)
• Adjustment location : L801
• Input level : 60dB μ V
Method : Set to FM 98.0MHz and adjust L801 so that the voltage between TP3 and TP4 becomes 0V $\pm$ 0.03V.
Next, check that the distortion is less than 1.2%.
10. FM Separation Check
Settings : • Test point : TP8 (Lch), TP9 (Rch)
• Input level : 60dB μ V
Method : Set to FM 83.0MHz and check that the test point is more than 12dB.

< DECK SECTION >

1. Tape Speed Adjustment
Settings : • Test tape : TTA-100
• Test point : TP8 (Lch), TP9 (Rch)
• Adjustment location : SFR601
Method : Play back (FWD) the test tape and adjust SFR601 so that the frequency counter reads $3000\text{Hz} \pm 5\text{Hz}$ and $\pm 45\text{Hz}$ (REV) with respect to forward speed.
2. Head Azimuth Adjustment (Deck 1, 2)
Settings : • Test tape : TTA-300
• Test point : TP8 (Lch), TP9 (Rch)
• Adjustment location : Head azimuth adjustment screw
Method : Play back (FWD) the 8kHz signal of the test tape and adjust screw so that the output becomes maximum.
3. PB Frequency Response Check (Deck 1, 2)
Settings : • Test tape : TTA-330
• Test point : TP8 (Lch), TP9 (Rch)
Method : Play back the 315Hz and 8kHz signals of the test tape and check that the output ratio of the 8kHz signal with respect to that of the 315Hz signal is $0\text{dB} \pm 4\text{dB}$.
4. REC/PB Frequency Response Check (Deck 2)
Settings : • Test tape : TTA-602
• Test point : TP8 (Lch), TP9 (Rch)
• Input signal : 1kHz / 8kHz (-20Vu)
Method : Apply a 1kHz signal and REC mode. Then adjust OSC attenuator so that the output level at the TP8, TP9 becomes 46mV. Record and play back the 1kHz and 8kHz signals and check that the output of the 8kHz signals is $0\text{dB} \pm 5\text{dB}$ with respect to that of the 1kHz signal.
5. REC/PB Sensitivity Check
Settings : • Test tape : TTA-602
• Test point : TP8 (Lch), TP9 (Rch)
• Input signal : 1kHz (0Vu)
Method : Apply a 1kHz signal and REC mode. Then adjust OSC attenuator so that the output level at TP8, TP9 becomes 460mV. Record and play back the 1kHz signals and check that the output is $-1\text{dB} \pm 3.5\text{dB}$.

< FRONT SECTION >

6. μ -CON CLOCK Adjustment
Settings : • Test point : TP5 (CLK), TP2 (GND)
• Adjustment location : L201
Method : Connect a frequency counter to TP2 and TP5. Adjust L201 so that the frequency across the test point becomes $247.76\text{Hz} \pm 0.24\text{Hz}$.

CD TEST MODE

1. How to Activate CD Test Mode

While pressing the CD function button, insert the AC plug to the outlet. The message “CD TEST” appears on the display.

2. How to Cancel CD Test Mode

Exit the CD test mode by any of the following procedures.

- Press the function button (except the CD function button.)
- Press the power button.
- Disconnect the AC plug.

3. CD Test Mode functions

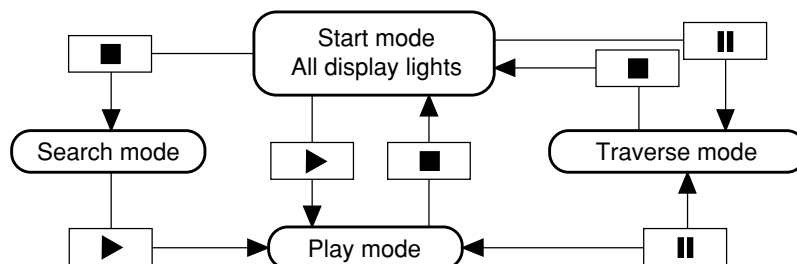
No	Mode	Operation	FL display	Operation	Checking item
1	Start mode		All lit		• FL item • Microprocessor
2	Search mode	■	1 Tr	• LD lights • Continuous focus search *1	• APC circuit • Laser current • Focus search waveform • Focus error waveform (FOK and FZC are not monitored in the search mode)
3	Play mode	◀ ▶	Normal time display	• Normal playback • If TOC cannot be read, focus search of “2” is continued	• Focus servo • Tracking servo • Sled servo • Spindle servo • FOK • RF waveform
4	Traverse mode		Normal time display	• Turning off/on repeats each time tracking servo OFF/ON is pressed	• Tracking servo • Traverse waveform
5	Sled mode	◀◀ ▶▶	CD TEST	• Pickup moves to the outermost track *2 • Pickup moves to the innermost track (normal operation during playback)	• Sled circuit • Mechanism

* Note 1: The driver IC (IC501) heats up and the protection circuit starts working when the focus search is continued for 10 minutes or longer. There can be a case that operations cannot be performed correctly. In such a case, turn off the main power. After cooling down, restart the unit.

* Note 2: Be careful not to damage the gear because the sled motor rotates while the FF or RWD button is being pressed even if the pick-up is located in the innermost track or the outermost track.

4. Overview of Operation

The each mode can be operated one after another using each button in the order that is shown by the arrow mark in the illustration from the “Start” mode.



MD TEST MODE

1. Starting up the MD Test Mode

While pressing the MD function button, insert the AC plug into the outlet.

Notes: 1) Mechanism abnormalities are ignored while the test mode is starting up.

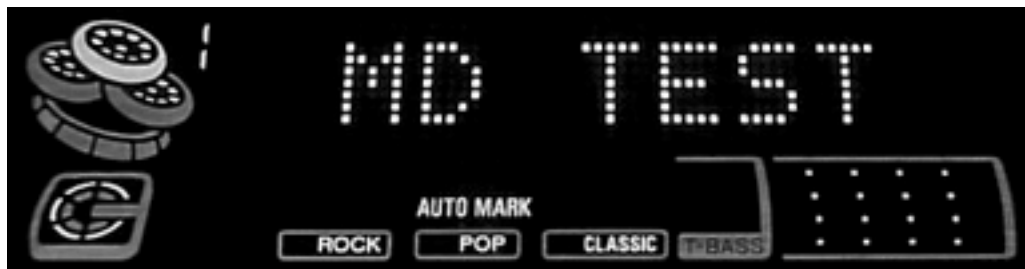
If any abnormality occurs, disconnect the plug immediately.

2) During test mode operation, playback and recording are not possible.

2. Checking the MD Test Mode

Indication

About five seconds after the test mode starts, characters are displayed as shown below on the display and the test mode becomes usable.



3. Canceling the MD Test Mode

1) Press the MD EJECT button to eject the disk.

2) Disconnect the AC plug.

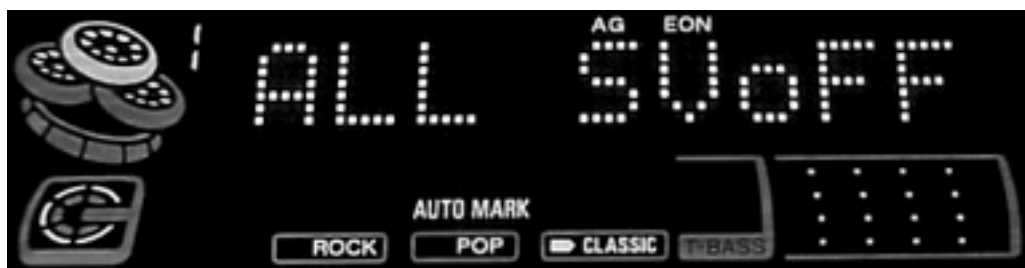
* If the MD test mode is canceled by procedures other than the above, the unit sometimes run incorrectly when the power is turned on again. If this happens, disconnect the AC plug.

4. Switching to the Servo Standby Mode

After starting up the test mode, press the STOP button to switch to the servo standby mode. (Indication: ALL SVoFF)

Change from the servo standby mode to other modes.

When the STOP button is pressed in each mode, the display returns to "ALL SVoFF".



4-1. Audio System Output Check

The signal of 1 kHz, -17 dBV (140 mV) can be checked using the MD board AOUTL, AOUTR in the test mode.

5. Checking the Sled Feed Operation

1) Press the F.SKIP button in the "ALL SVoFF" state to move the pickup to the outer circumference.

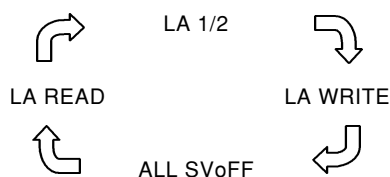
Then "T.SLED fwd" is displayed.

2) Press the B.SKIP button in the "ALL SVoFF" state to move the pickup to the inner circumference.

Then "T.SLED rvs" is displayed. Turn on the INSIDE LIMIT switch to turn on the graphic equalizer "CLASSIC".

6. Checking the Laser Power

1) Every time the EDIT button is pressed in the "ALL SVoFF" state, the laser power is switched. The display is switched as shown below.



2) After checking, press the STOP button to return the display to "ALL SVoFF".

7. Checking the Loading Mechanism and OWH

To check the operations of the loading mechanism and OWH, follow the procedure given below.

Every time the SYNC REC (DIGITAL) CD → MD NORMAL button and the MD EJECT button are pressed in the “ALL SVoFF” state, the OWH moves up and down.

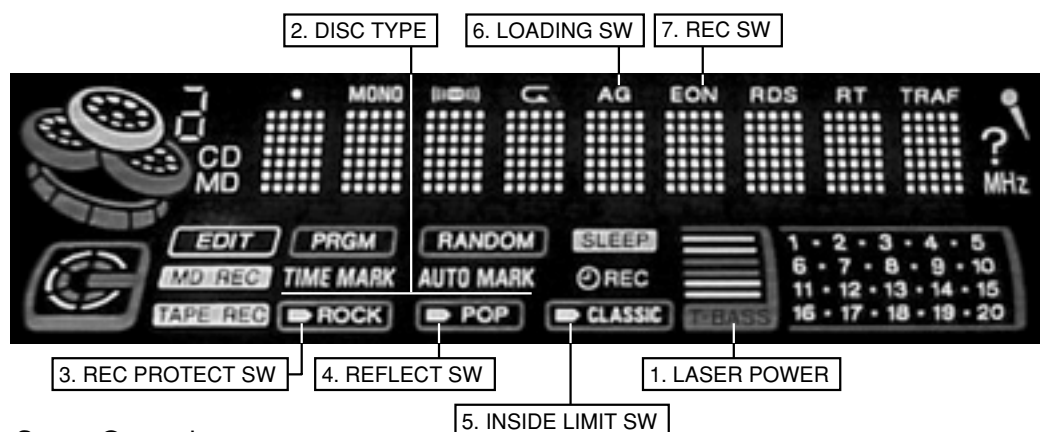
SYNC REC (DIGITAL) CD → MD NORMAL OWH DOWN

MD EJECT button OWH UP/unloading

8. Display Indication

The state of the circuits, selected disk and switches can be checked on the display.

	Function	Display	Pict indication	During pict on	During pict off
1	Laser power	LA READ-1/2-WRITE	T-BASS	Displayed using the three-step level meter	
2	Disk type	SEL GRV	TIME MARK	MO DISC (for recording and playback)	
		SEL PIT	AUTO MARK	PIT DISC (for playback)	
3	REC PROTECT SW		ROCK	REC is possible	REC protect
4	REFLECT SW		POP	PIT DISC	MO DISC
5	INSIDE LIMIT SW		CLASSIC	SW ON (innermost circumference)	SW OFF
6	LOADING SW		EON	SW OFF	SW ON
7	REC SW		AG	SW OFF	SW ON



9. Checking the Servo Operation

9-1. Checking the Focus Search and Spindle Kick 1 (checking the S-curve)

- 1) When the REPEAT button of the remote control is pressed in the “ALL SVoFF” state, the focus search is performed. Then “FOCUS CHK” is displayed. These operations are repeated regardless of whether a disk is installed. Therefore, the S-curve can be checked with the disk inserted.
- 2) After checking, press the STOP button to return the display to “ALL SVoFF”.

9-2. Checking the Focus Search and Spindle Kick 2

- 1) When the PLAY button is pressed in the “ALL SVoFF” state without inserting a disk, the search and spindle kick are performed at the same time. Then “FOCUS SCH” is displayed.
- 2) After checking, press the STOP button to return the display to “ALL SVoFF”.

9-3. Checking the Focus Servo

- 1) Insert a disk.
- 2) Press the MODE button and set the servo mode according to the inserted disk as shown below.
 - MO disk Indication “SEL GRV” appears and “TIME MARK” lights.
 - PIT disk Indication “SEL PIT” appears and “AUTO MARK” lights.
- 3) Press the PLAY button.
- 4) If the focus servo is normal, “FOCUS SCH” appears and “FOCUS ON!” appears.
- 5) After checking, press the STOP button to return the display to “ALL SVoFF”.

9-4. Checking the All Servo ON

- 1) When the ENTER button is pressed in the “FOCUS ON!” state, the tracking/sled servo is turned on and all servos run. If the servos are all normal, “ALL SV ON” is displayed.
- 2) After checking, press the STOP button to return the display to “ALL SVoFF”.

ELECTRICAL ADJUSTMENT

All the adjustments and checks of the MD block are performed in the test mode.
When “No Adjust” appears on the display, follow sections 1 through 3 to adjust.

1. Temperature Compensation Adjustment

- * Normally, do not perform the temperature compensation adjustment.
If the adjustment value is extensively different, perform the adjustment as given below in a suitable environment for measuring the correct temperature near the unit.
- Test point: Check the test point on the display.
- Tool: Thermometer
 - 1) After the MD test mode starts up, press the STOP button to display “ALL SVoFF”.
 - 2) Press the DISPLAY button to display “TEMP = \$**”.
 - 3) Press the PAUSE button to display “T + **C + 00”.
 - 4) Put the thermometer near the MD mechanism to measure the room temperature.
 - 5) Check the values of the thermometer and press the B.SKIP button and the F.SKIP button until the value is the same as ** of the display. Press the ENTER button to store the value.
 - 6) After adjustment, press the STOP button to return the display to “ALL SVoFF”.
- * When “No Adjust” is displayed, perform 1) to 3) and press the ENTER button without changing the adjustment value using the B/F.SKIP button.

2. Laser Power Adjustment

- Test point: Check the display/Pickup laser output
- Tool: Laser power meter (meters that can measure up to 10 mW)

2-1. Playback Laser Power Adjustment

- 1) Press the EDIT button in the “ALL SVoFF” state to change the display to “LA READ”.
- 2) Press the PAUSE button once to display “LASER = \$**”.
- 3) Adjust “LASER=\$11” using the B.SKIP and F.SKIP buttons and press the ENTER button.
- 4) Measure the pickup laser output using the laser power meter and check that it is about 0.68mW.
- 5) After adjustment, press the STOP button to change the display to “ALL SVoFF”.

2-2. Record Laser Power Adjustment

- 1) Press the EDIT button three times in the “ALL SVoFF” state to change the display to “LA WRITE”.
- 2) Press the PAUSE button once to display “LASER = \$**”.
- 3) Adjust “LASER=\$9F” using the B.SKIP and F.SKIP buttons and press the ENTER button.
- 4) Measure the pickup laser output using the laser power meter and check that it is about 6.8mW.
- 5) After adjustment, press the STOP button to return the display to “ALL SVoFF”.

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

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

- Test point: Check the test point on the display.
- Test disk: MDW-74, TGYS-1 or equivalent

3-1. Adjusting the MO Disk

- 1) Load the MDW-74.
- 2) Press the MODE button to display “SEL GRV”.
- 3) Press the MD function button to display “AUTO ADJ”. After adjustment, “DONE” is displayed.
(If the adjustment failed, “FAILED” appears.)
- 4) After adjustment, press the STOP button to return the display to “ALL SVoFF”.

3-2. IVR, EFB, Focus/Tracking/Sled Gain Check of MO Disk

- 1) Move the pickup to the center of the disk using the B.SKIP button and F.SKIP button.
- 2) Press the PLAY button to display “FOCUS ON!”.
- 3) Press the ENTER button to display “ALL SV ON”.
- 4) Press the STOP button and press the DISPLAY button twice. Confirm that the values of “I\$** : E\$◇◇” are within the range shown below. (hexadecimal)
I\$ “**” 03 to 0A
E\$ “◇◇” 09 to 15



- 5) Press the DISPLAY once again.

Confirm that the values of "f**t##s△△" are within the range shown below. (hexadecimal)

f "*)" 1A to 40
 t "##" 0C to 30
 s "△△" 0C to 30



- 6) After checking, press the STOP button to return the display to "ALL SVoFF".

3-3. Adjusting the PIT Disk

- 1) Insert the TGYS-1.
- 2) Press the MODE button to display "SEL PIT".
- 3) Press the MD function button to display "AUTO ADJ". After adjustment, "DONE" is displayed. (If the adjustment failed, "FAILED" appears.)
- 4) After adjustment, press the STOP button to return the display to "ALL SVoFF".

3-4. IVR, EFB, Focus/Tracking/Sled Gain Check of PIT Disk

- 1) Move the pickup to the center of the disk using the B.SKIP button and F.SKIP button.
- 2) Press the PLAY button to display "FOCUS ON!".
- 3) Press the ENTER button to display "ALL SV ON".
- 4) Press the STOP button and press the DISPLAY button twice. Confirm that the values of "I\$: E\$◇◇" are within the range shown below. (hexadecimal)

I\$ "*)" 14 to 19
 E\$ "◇◇" 09 to 15



- 5) Press the DISPLAY button once again. Confirm that the values of "f**t##s△△" are within the range shown below. (hexadecimal)

f "*)" 1A to 45
 t "##" 0C to 3F
 s "△△" 0C to 3F



- 6) After checking, press the STOP button to return the display to "ALL SVoFF".

4. Playback Error Rate Check (PIT DISC)

- Test point: Check the test point on the display.
 - Test disk: TGYS-1 or equivalent
- 1) Load the TGYS-1.
 - 2) Move the pickup to the center of the disk using the B.SKIP button and F.SKIP button.
 - 3) Press the MODE button to display "SEL PIT".
 - 4) Press the PLAY button to display "FOCUS ON!".
 - 5) Press the ENTER button to display "ALL SV ON".
 - 6) Press the DISPLAY button once to confirm that the address indication is stable.
 - 7) Press the DISPLAY button once again to display the playback error rate.
 Confirm that the numbers of "****:****" (underlined portion) is "0030" or lower.
 - 8) After checking, press the STOP button to return the display to "ALL SVoFF".

5. Record/Playback Error Rate Check (MO DISC)

- Test point: Check the test point on the display.
 - Test disk: MDW-74
- 1) Load the MDW-74.
 - 2) Move the pickup to the center of the disk using the B.SKIP button and F.SKIP button.
 - 3) Press the CD function button. Recording starts automatically in cluster 600.
 - 4) After recording for about 15 seconds, press the STOP button.
 - 5) Press the AUX/D-IN function button move the pickup to around cluster 600 and enter the "ALL SV ON" state (the display is in the state of the address indication). Press the DISPLAY button in or after cluster 600. Then confirm that the values of "****" (underlined portion) is "0030" or lower.
 - 6) After checking, press the STOP button to return the display to "ALL SVoFF".

6. How to Delete the UTOC (User TOC)

Do this procedure only when the UTOC needs to be deleted because "UTOC ERROR" or other message is displayed when inserting the recorded disk.

- 1) Insert the disk whose UTOC is to be deleted.
- 2) Move the pickup to the center of the disk using the B.SKIP button and F.SKIP button.
- 3) Press the MODE button to display "SEL GRV".
- 4) Press the MD REC button to display "R Analog".
- 5) Press the PLAY button to display "FOCUS ON!".
- 6) Press the ENTER button to display "ALL SV ON".
- 7) Press the ECO button to display "UTOCerase".
- 8) After the UTOC is deleted, "ALL SVoFF" automatically appears.

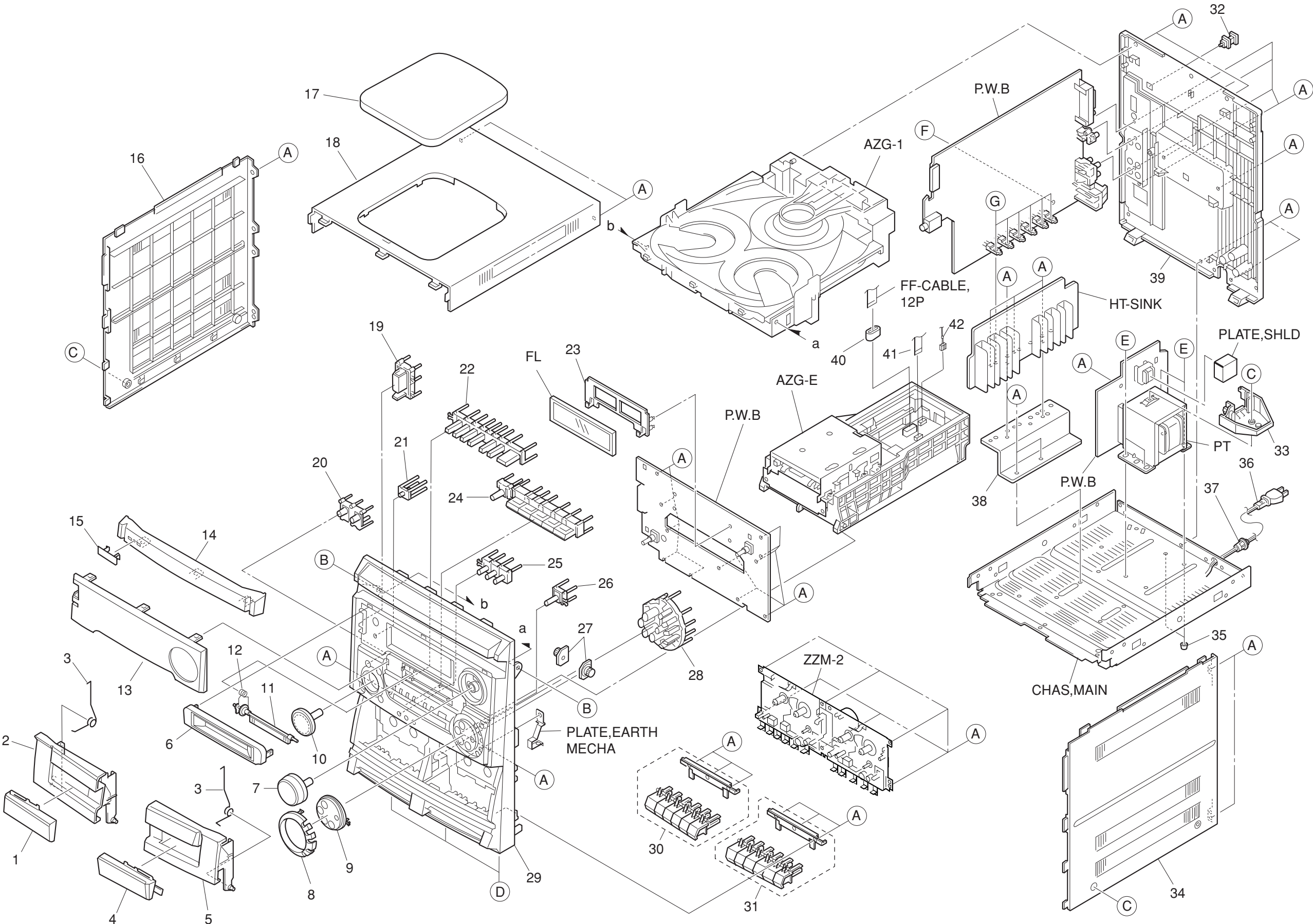
7. How to Initialize the EEP-ROM

Do the following procedure to set the adjustment value of the EEP-ROM to the default (standard value).

When initializing the EEP-ROM, be sure to do 1 to 3 of the MD electrical adjustment.

- 1) Press the GEQ button.
 - 2) Turn on the power again and confirm that "No Adjust" is displayed.
- * Even when "No Adjust" is displayed, MDs can be operated.





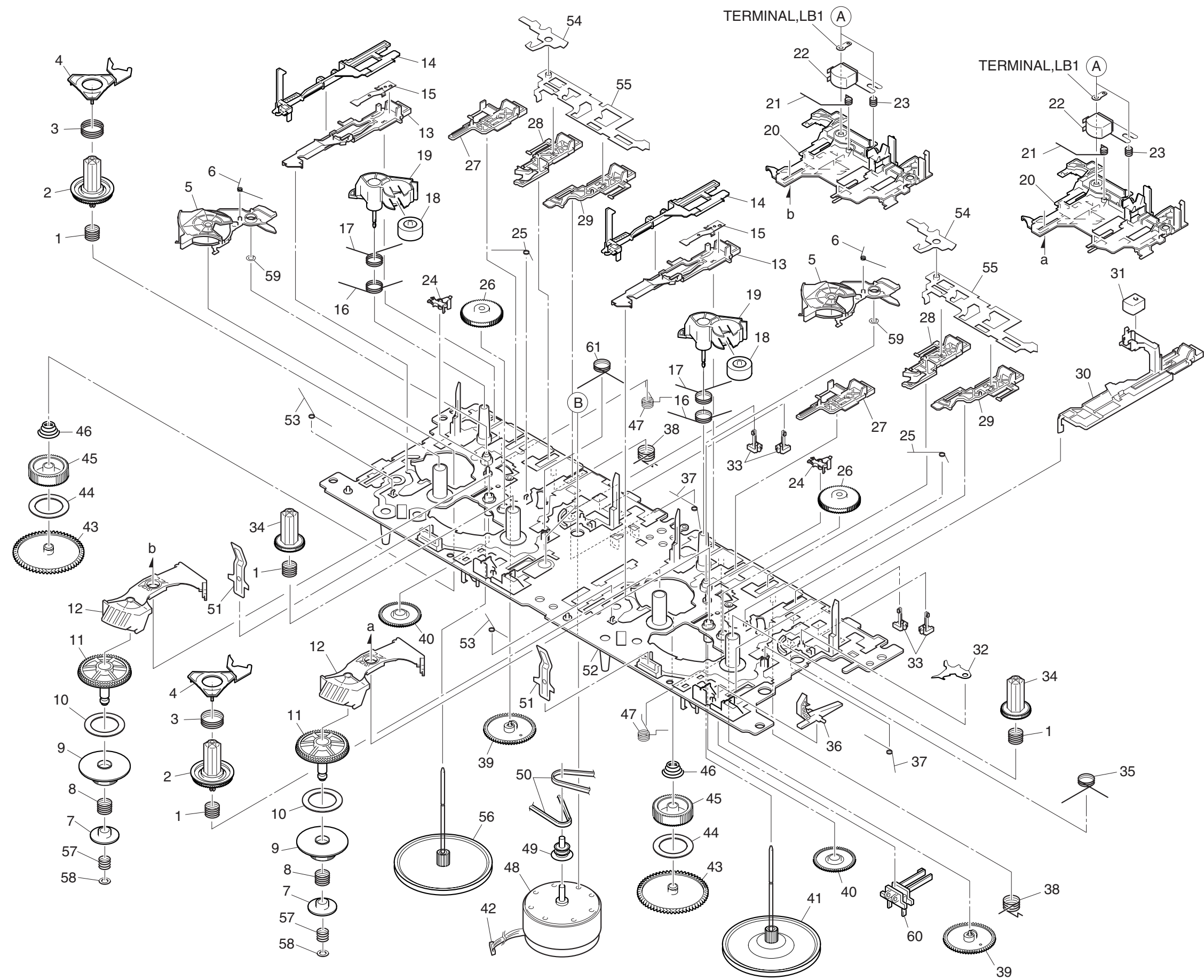
MECHANICAL PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-DBA-006-010		WINDOW, CASS 1
2	8A-DBA-003-110		BOX, CASS 1
3	82-NF7-218-010		SPR-T, CASS
4	8A-DBA-007-010		WINDOW, CASS 2
5	8A-DBA-028-010		BOX, CASS 2
6	8A-DBA-017-010		PANEL, MD
7	8A-DBA-011-010		KNOB, RTRY VOL
8	8A-DBA-018-010		RING, OPE
9	8A-DBA-010-010		PLATE, OPE
10	8A-DBA-015-010		KNOB, RTRY JOG
11	8A-DBA-019-010		PLATE, FLAP
12	87-NBG-207-010		SPR-T, FLAP NBG
13	8A-DBA-031-010		WINDOW, DISP EZ
14	8A-DBA-002-010		PANEL, TRAY S
15	87-CE3-023-010		BADGE, AIWA 30N SILV
16	8A-NFA-063-010		PANEL, LEFT V-2
17	86-NFZ-001-010		WINDOW, TOP
18	8A-DBA-025-010		PANEL, TOP V-2 R
19	8A-DBA-016-010		KEY, POWER
20	8A-DBA-012-010		KEY, GEQ
21	8A-DBA-020-010		REFLECTOR, ECO
22	8A-DBA-013-010		KEY, MD
23	88-SU1-201-110		GUIDE, FL
24	8A-DBA-008-010		KEY, FUN
25	8A-DBA-014-010		KEY, RDS

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
26	8A-DBA-027-010		KEY, EJECT
27	86-NFZ-231-010		DMPR, 70
28	8A-DBA-009-110		KEY, OPE
29	8A-DBA-035-010		CABI, FR EZ
30	8A-NFA-013-210		KEY, CASS 1
31	8A-NFA-014-010		KEY, CASS 2P
32	84-ZG1-245-210		CAP, OPTICAL
33	8A-NF9-208-010		HLDR, PWB PT
34	8A-NFA-065-010		PANEL, RIGHT V-2
35	8Z-NB8-240-010		COVER, PL
△ 36	87-A80-157-010		AC CORD ASSY, E BLK CC
37	87-085-185-010		BUSHING, AC CORD (E)
38	8A-DBA-209-010		HLDR, HT-SINK
39	8A-DBA-038-010		CABI, REAR EZS<EZS>
39	8A-DBA-039-010		CABI, REAR KS<KS>
40	87-A91-882-010		FBEAD, FSOC250RT1
41	88-906-171-110		FF-CABLE, 6P 1.25
42	87-NB7-615-010		CONN ASSY, 2P SHIELDPH/PH
A	87-067-703-010		TAPPING SCREW, BVT2+3-10
B	87-721-097-410		QT2+3-12 GLD
C	87-067-641-010		UTT2+3-8 (W/O SLOT) BL
D	87-067-688-010		BVTT+3-6
E	87-078-200-010		S-SCREW, IT+4-10
F	87-NF4-224-010		S-SCREW, IT3B+3-8 CU
G	87-067-001-010		S-SCREW, BVWST2+3-12 W/O SLOT

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	PT	Transparent Pink
LA	Aqua Blue				



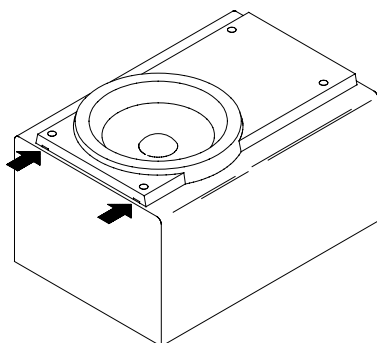
TAPE MECHANISM PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8Z-ZM1-254-310		SPR-C, REEL R	36	8Z-ZM1-220-110		LEVER, REC SENSOR
2	8Z-ZM1-225-110		GEAR, REEL R	37	8Z-ZM1-249-210		SPR-T, FR
3	8Z-ZM1-253-210		SPR-C, AUTO SENSOR	38	8Z-ZM1-242-310		SPR-T, FF/REW
4	8Z-ZM1-217-110		LEVER, AUTO SENSOR	39	8Z-ZM3-244-110		GEAR, CAM TD20
5	8Z-ZM1-212-210		LEVER, T-UP	40	8Z-ZM1-232-010		GEAR, IDL FF/REW
6	8Z-ZM1-245-310		SPR-T, AUTO	41	8Z-ZM1-290-010		FLY-WHL ASSY, ZZM-1
7	8Z-ZM1-236-010		CLR, SLIP FF/REW	42	8Z-ZM2-601-010		CONN ASSY, 9P ZZM-2
8	8Z-ZM1-252-110		SPR-C, FF/REW	43	8Z-ZM1-228-010		GEAR, SLIP T-UP B
9	8Z-ZM2-213-010		GEAR, SLIP FR A ZZM-2	44	8Z-ZM1-265-010		FELT, T-UP
10	8Z-ZM1-269-010		FELT, FF/REW 2	45	8Z-ZM1-227-010		GEAR, SLIP T-UP A
11	8Z-ZM1-238-110		GEAR, SLIP FF/REW B 2	46	8Z-ZM1-251-210		SPR-C, T-UP SLIP
12	8Z-ZM1-237-110		LEVER, FF/REW 2	47	8Z-ZM1-243-310		SPR-T, STOP/PAUSE
13	8Z-ZM1-209-510		LEVER, PAUSE	48	87-A91-532-010		MOT, MS15U2LW1A
14	8Z-ZM1-218-210		LEVER, E-LOCK H	49	8Z-ZM1-235-010		PULLEY, MOT
15	8Z-ZM1-256-010		SPR-P, PAUSE	50	8Z-ZM2-216-010		BELT, MAIN M
16	8Z-ZM1-244-110		SPR-T, T-UP	51	8Z-ZM1-260-010		SPR-P, CASSETTE
17	8Z-ZM1-247-310		SPR-T, PINCH	52	8Z-ZM2-201-510		CHAS ASSY, ZZM-2
18	8Z-ZM1-261-110		ROLLER ASSY, PINCH	53	8Z-ZM1-255-310		SPR-T, E-LOCK
19	8Z-ZM1-221-210		LEVER, PINCH	54	8Z-ZM2-219-010		LEVER, E-OPEN ZZM-2
20	8Z-ZM1-205-310		LEVER, PLAY	55	8Z-ZM1-214-310		LEVER, LOCK
21	8Z-ZM1-248-210		SPR-T, BRG	56	8Z-ZM2-230-010		FLY-WHL ASSY, ZZM-2
22	87-A90-403-110		HEAD, RPH MS15R	57	8Z-ZM1-257-110		SPR-C, F/R
23	84-ZM2-227-310		SPR-C, AZIMUTH	58	8Z-ZM1-275-010		W-L, 1.47-4-0.25
24	8Z-ZM1-216-110		LEVER, AUTO	59	87-B10-301-010		W-L, 1.63-3.2-0.5 SLIT
25	8Z-ZM1-246-110		SPR-T, AUTO 2	60	87-A91-494-010		SW, LEAF MSW17820
26	8Z-ZM2-214-110		GEAR, IDL REW ZZM-2	61	8Z-ZM1-241-010		SPR-T, PLAY
27	8Z-ZM2-212-010		LEVER, STOP ZZM-2	A	84-ZM2-242-010		S-SCREW, AZ1-2-6.4
28	8Z-ZM1-207-010		LEVER, FF	B	8Z-ZM2-220-110		V+2.6 ZZM-2
29	8Z-ZM1-206-010		LEVER, REW				
30	8Z-ZM1-210-010		LEVER, REC				
31	87-A90-404-010		HEAD, EH LE15B				
32	8Z-ZM2-218-010		LEVER, REC LOCK ZZM-2				
33	87-A91-492-010		SW, LEAF MSW18560				
34	8Z-ZM1-226-010		GEAR, REEL L				
35	8Z-ZM1-241-210		SPR-T, PLAY				

GENERAL SPEAKER DISASSEMBLY INSTRUCTIONS (FOR REFERENCE)

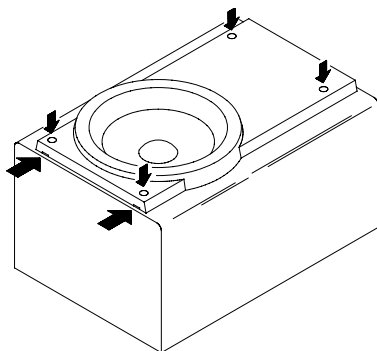
Type.1

Insert a flat-bladed screwdriver into the position indicated by the arrows and remove the panel. Remove the screws of each speaker unit and then remove the speaker units.



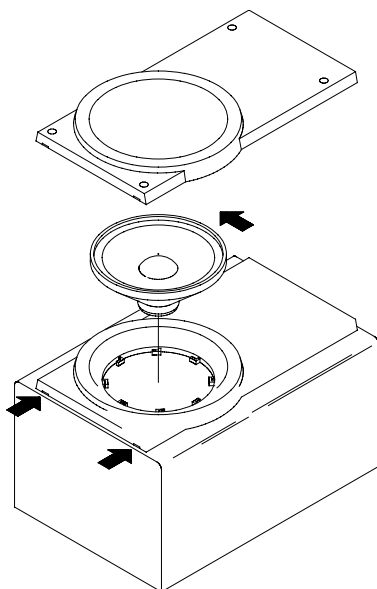
Type.2

Remove the grill frame and four pieces of rubber caps by pulling out with a flat-bladed screwdriver. Remove the screws from hole where installed rubber caps. Insert a flat-bladed screwdriver into the position indicated by the arrows and remove the panel. Remove the screws of each speaker unit and then remove the speaker units.

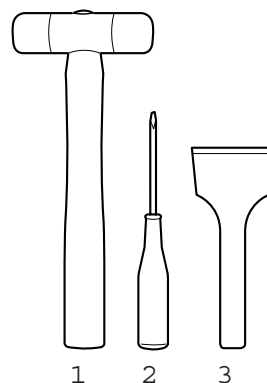


Type.3

Insert a flat-bladed screwdriver into the position indicated by the arrows and remove the panel. Turn the speaker unit to counter-clockwise direction while inserting a flat-bladed screwdriver into one of the hollows around speaker unit, and then remove the speaker unit. After replacing the speaker unit, install it turning to clockwise direction until "click" sound comes out.



Type.4



TOOLS

- 1 Plastic head hammer
- 2 () flat head screwdriver
- 3 Cut chisel

How to Remove the PANEL, FR

1. Insert the () flat head screwdriver tip into the gap between the PANEL, FR and the PANEL, SPKR. Tap the head of the () flat head screwdriver with the plastic hammer head, and create the clearance as shown in Fig-1.
2. Insert the cut chisel in the clearance, and tap the head of the cut chisel with plastic hammer as shown in Fig-2, to remove the PANEL, FR.
3. Place the speaker horizontally. Tap head of the cut chisel with plastic hammer as shown in Fig-3, and remove the PANEL, FR completely.

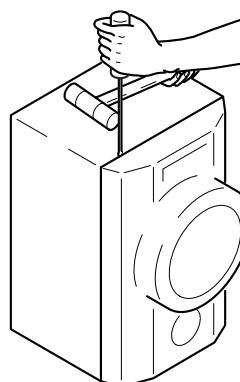


Fig-1

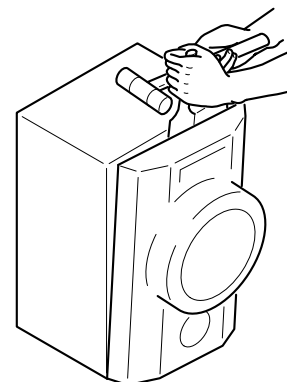


Fig-2

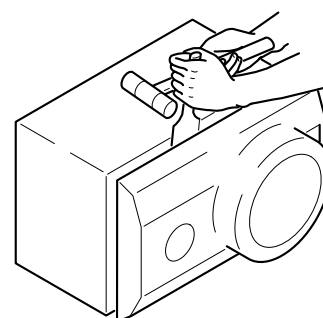


Fig-3

How to Attach the PANEL, FR

Attach the PANEL, FR to the PANEL, SPKR. Tap the four corners of the PANEL, FR with the plastic hammer to fit the PANEL, FR into the PANEL, SPKR completely.

SPEAKER PARTS LIST <SX-NHG2 YSC, YSC9>

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-NSA-001-010		PANEL, FR (YSC9)
1	8A-NSL-001-010		PANEL, FR (YSC)
2	8A-NSA-003-010		GRILLE, FRAME ASSY (YSC9)
2	8A-NSL-003-010		GRILLE, FRAME ASSY (YSC)
3	8A-NSK-602-010		SPKR, W 140 (YSC9)
4	8A-NSK-606-010		SPKR, T 60 (YSC9)
5	87-NSH-612-010		SPKR, CERAMIC ASSY (YSC9)
6	87-NS7-611-010		CORD, SPKR
7	8A-NSL-602-010		SPKR, 120 (YSC)

ACCESSORIES / PACKAGE LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-DBA-915-110		IB, K (E) I <K>
1	8A-DBA-916-110		IB, EZ (9L) I <EZ>
2	87-A90-118-010		ANT, WIRE FM (Z)
3	87-006-225-010		ANT, LOOP AM NC2 <EZ>
4	8Z-NB8-704-010		RC UNIT, RC-ZAS16
 5	87-099-811-010		PLUG, ADPTR CONV (K) <K>

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