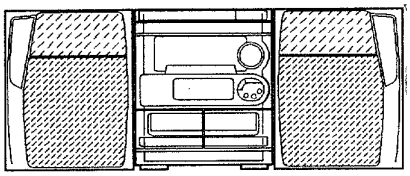
aiwa

aiwa SERVICE

NSX-K350

SERVICE MANUAL



COMPACT DISC STEREO
CASSETTE RECEIVER

- BASIC TAPE MECHANISM : 2ZM-3 MK2 YPR4
- BASIC CD MECHANISM : 4ZG–1 VSGD
- TYPE : HR, HC

SYSTEM	SPEAKER	CD – CASSEIVER
NSX–K350	SX–FNS36	CX–NK350

If requiring information about the CD mechanism, see Service Manual of 4ZG-1, S/M Code No. 09-977-206-10T.

S/M Code No. 09–977–194–6FE

SPECIFICATIONS

<FM Tuner section>

Tuning range	87.5 MHz to 108 MHz
Usable sensitivity (IHF)	13.2 dBf
Antenna terminals	75 ohms (unbalanced)

<MW Tuner section>

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

<SW Tuner section>

Tuning range	5.900 MHz to 17.900 MHz
Antenna	Wire antenna

<Amplifier section>

Power output	Rated : 68 W + 68 W (6 ohms, THD 1 %, 1kHz) Reference : 85 W + 85 W (6 ohms, THD 10 %, 1kHz)
Total harmonic distortion	0.05 % (70 W, 1 kHz, 6 ohms DIN AUDIO)
Inputs	VIDEO/AUX : 150 mV (adjustable) MD: 150 mV (adjustable) MIC1, MIC2 : 1 mV (10 kohms)
Outputs	Line out : 200mV SUPER WOOFER : 2.3 V VIDEO OUT : 1.0 Vp-p (75 ohms) SPEAKERS : accept speakers of 6 ohms or more SURROUND SPEAKERS : accept speakers of 16 ohms or more PHONES (stereo jack) : accepts headphones of 32 ohms or more

<Cassette deck section>

Track format	4 tracks, 2 channels stereo
Frequency response	50 Hz –15000 Hz
Recording system	AC bias
Heads	Deck 1 : Playback head x1 Deck 1 : Recording/playback/ erase 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
Video signal (selectable)	NTSC/PAL color format
Video data	MPEG 1
Audio data	MPEG 1, LAYER 2

<Speaker system SX–FNS36>

Cabinet type	2 way, bass reflex with surround speaker (magnetic shielded type)
Speakers	Woofer : 140 mm cone type Tweeter : 60 mm cone type Surround speaker : 60 mm cone type
Impedance	Front speaker : 6 ohms Surround speaker : 16 ohms
Output sound pressure level	87 dB/W/m
Dimensions (W x H x D)	240 x 304 x 253 mm
Weight	3.2 kg

<General>

Power requirements	120 V/ 220 – 230 V/240 V AC, switchable 50/60 Hz
Power consumption	115 W
Dimensions of main unit (W x H x D)	260 x 309 x 346 mm
Weight of main unit	6.7 kg

• Design and specifications are subject to change without notice.

ACCESSORIES / PACKAGE LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	87-NH7-910-010		IB,H(EC-H)I<HR>
1	87-NH7-911-010		IB,HC(EC-K)I<HC>
2	87-043-095-010		WIRE,ANTTENA
3	87-050-103-010		CORD,PIN 1PY1.5M
4	87-A90-054-010		ANT,LOOP AM-CON C
5	87-A90-064-010		FEEDER-ANT,FM (SHS)
⚠6	87-A90-312-010		PLUG,CONVERSION WTN-1157R1
7	87-NH4-660-010		RC UNIT,RC-7AS07

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 laserståling 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.

VARNING!
Om apparaten används på annat sätt än vad som specificeras i denna bruksanvising, kan användaren utsättas för osynling 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 laserståling ved åbning, når sikkerhedsafbrydereer 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.

CLASS 1	LASER PRODUCT
KLASSE 1	LASER PRODUKT
LUOKAN 1	LASER LAITE
KLASS 1	LASER APPARAT

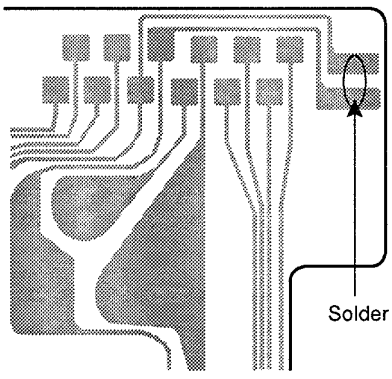
Precaution to replace Optical block

(KSS – 213B)

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 figure below.

PICK-UP Assy P.C.B



ELECTRICAL MAIN PARTS LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC			
	87-NH4-610-010		IC,LC866548A-5E56
	87-070-083-010		IC,GP1U281X
	87-A20-501-040		C-IC,BA7762FS
	87-A20-083-010		IC,BA3835S
	87-A20-450-040		C-IC,BH3864F
	87-A20-613-040		C-IC,BU9262AFS
	87-A20-456-040		C-IC,BH3810FS
	87-017-888-080		C-IC,NJM4558MD
	86-NFZ-655-010		IC,LC72131D(Z)
	87-A20-438-010		IC,LA1837
	87-A20-561-040		IC,M65847AFP
	87-020-454-010		IC,DN6851
TRANSISTOR			
	87-026-263-080		C-TR,RN1410
	89-213-702-010		TR,2SB1370E
	87-A30-076-080		C-TR,2SC3052F
	87-026-610-080		TR,KTC3198GR
	87-A30-073-080		C-TR,RT1N 141C
	87-A30-085-070		C-TR,CSA1362GR
	87-A30-083-080		TR,CSD1489B
	87-A30-075-080		C-TR,2SA1235F
	87-A30-084-080		TR,CSB1058B
	87-A30-071-080		C-TR,RT1N 144C
	87-026-609-080		TR,KTA1266GR
	87-A30-086-070		C-TR,CSD1306E
	87-A30-106-070		C-TR,CMBT5551
	87-A30-111-080		TR,C2N5401
	87-A30-162-010		FET,2SK2937
	87-A30-097-010		TR,FN1016
	89-505-434-540		C-FET,2SK543-TB(4/5)
	87-A30-098-010		TR,FP1016
	87-A30-089-010		FET,2SK2723
	87-A30-072-080		C-TR,RT1P 144C
	87-A30-087-080		C-FET,2SK2158
	87-A30-074-080		C-TR,RT1P141C
	89-327-143-080		C-TR,2SC2714 (O)
	87-026-463-080		TR,2SA933S
DIODE			
	87-A40-270-080		C-DIODE,MC2838
	87-A40-116-060		DIODE,RS403L-B-D-51
	87-A40-115-060		DIODE,RS603M
	87-017-437-080		DIODE,1N4148M
	87-A40-246-080		DIODE,1N4148T-72
	87-A40-269-080		C-DIODE,MC2836
	87-070-274-080		DIODE,1N4003 SEM
	87-A40-344-080		ZENER,MTZJ6.2C
	87-A40-341-080		ZENER,MTZJ36A
	87-A40-345-080		ZENER,MTZJ10C
	87-A40-004-089		ZENER,MTZJ16 A
	87-A40-184-090		DIODE,RK34 (F)
	87-070-136-080		ZENER,MTZJ5.1B
	87-017-481-080		ZENER,UZ-5.6BSB
	87-A40-003-080		ZENER,MTZJ4.3A
	87-A40-234-080		ZENER,MTZJ5.6A
MAIN C.B			
C101	87-016-520-090		CAP,E 3300-65 M SMG
C102	87-016-520-090		CAP,E 3300-65 M SMG
C103	87-016-658-090		CAP,E 4700-35 M SMG
C104	87-016-658-090		CAP,E 4700-35 M SMG
C105	87-012-368-080		C-CAP,S 0.1-50 Z F
C106	87-012-368-080		C-CAP,S 0.1-50 Z F
C107	87-012-368-080		C-CAP,S 0.1-50 Z F
C108	87-012-368-080		C-CAP,S 0.1-50 Z F
C109	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C110	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C111	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C112	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C113	87-A10-417-080		CAP,E 47-63 SME
C116	87-A10-417-080		CAP,E 47-63 SME
C117	87-010-430-080		CAP,E 100-63
C118	87-010-263-080		CAP,E 100-10 SME
C119	87-010-260-080		CAP,E 47-25 SME
C120	87-010-403-080		CAP,E 3.3-50 M SME
C121	87-012-140-080		C-CAP,S 470P-50 J CH
C123	87-010-384-080		CAP,E 100-25 M SME
C124	87-010-112-080		CAP,E 100-16 M SME
C125	87-010-235-080		CAP,E 470-16 SME
C129	87-010-393-080		CAP,E 100-35 M SME
C201	87-010-400-080		CAP,E 0.47-50 M SME
C202	87-010-400-080		CAP,E 0.47-50 M SME
C205	87-010-183-080		C-CAP,S 2700P-50 K B
C206	87-010-183-080		C-CAP,S 2700P-50 K B
C207	87-010-404-080		CAP,E 4.7-50 M SME
C208	87-010-404-080		CAP,E 4.7-50 M SME
C209	87-010-404-080		CAP,E 4.7-50 M SME
C210	87-010-404-080		CAP,E 4.7-50 M SME
C211	87-010-186-080		C-CAP,S 4700P-50 K B
C212	87-010-186-080		C-CAP,S 4700P-50 K B
C213	87-010-260-080		CAP,E 47-25 SME
C214	87-010-260-080		CAP,E 47-25 SME
C215	87-012-368-080		C-CAP,S 0.1-50 Z F
C219	87-012-368-080		C-CAP,S 0.1-50 Z F
C220	87-012-368-080		C-CAP,S 0.1-50 Z F
C221	87-012-368-080		C-CAP,S 0.1-50 Z F
C222	87-012-368-080		C-CAP,S 0.1-50 Z F
C223	87-010-194-080		C-CAP,S 0.047-25 Z F
C225	87-A10-516-080		C-CAP,S 100P-200V
C226	87-A10-516-080		C-CAP,S 100P-200V
C229	87-016-461-080		C-CAP,S 0.47-16 Z F
C230	87-016-461-080		C-CAP,S 0.47-16 Z F
C242	87-010-406-080		CAP,E 22-50 M SME
C243	87-010-197-080		C-CAP,S 0.01-25 K B
C244	87-010-406-080		CAP,E 22-50 M SME
C301	87-010-318-080		C-CAP,S 47P-50 J CH
C302	87-010-318-080		C-CAP,S 47P-50 J CH
C303	87-012-157-080		C-CAP,S 330P-50 J CH GRM
C304	87-012-157-080		C-CAP,S 330P-50 J CH GRM
C305	87-012-145-080		C-CAP,S 270P-50 J CH
C306	87-012-145-080		C-CAP,S 270P-50 J CH
C307	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C309	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C310	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C311	87-010-198-080		C-CAP,S 0.022-25 K B
C312	87-010-198-080		C-CAP,S 0.022-25 K B
C313	87-010-178-080		C-CAP,S 1000P-50 K B
C314	87-010-178-080		C-CAP,S 1000P-50 K B
C315	87-010-178-080		C-CAP,S 1000P-50 K B
C316	87-010-178-080		C-CAP,S 1000P-50 K B
C321	87-016-492-080		C-CAP,S 0.33-16 Z F
C322	87-016-492-080		C-CAP,S 0.33-16 Z F
C324	87-010-260-080		CAP,E 47-25 SME
C325	87-010-370-080		CAP,E 330-6.3 M SME
C327	87-010-404-080		CAP,E 4.7-50 M SME
C328	87-010-404-080		CAP,E 4.7-50 M SME
C332	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C335	87-010-401-080		CAP,E 1-50 M SME
C336	87-010-401-080		CAP,E 1-50 M SME
C337	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C339	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C340	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C351	87-012-140-080		C-CAP,S 470P-50 J CH
C352	87-012-140-080		C-CAP,S 470P-50 J CH
C354	87-010-175-080		C-CAP,S 560P-50 J SL

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C355	87-010-178-080		C-CAP,S 1000P-50 K B
C356	87-010-260-080		CAP,E 47-25 SME
C357	87-010-197-080		C-CAP,S 0.01-25 K B
C358	87-010-183-080		C-CAP,S 2700P-50 K B
C359	87-010-183-080		C-CAP,S 2700P-50 K B
C360	87-010-183-080		C-CAP,S 2700P-50 K B
C370	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C373	87-010-993-080		C-CAP,S 0.056-25 K B
C374	87-010-993-080		C-CAP,S 0.056-25 K B
C378	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C379	87-010-382-080		CAP,E 22-25 M SME
C380	87-010-382-080		CAP,E 22-25 M SME
C381	87-010-197-080		C-CAP,S 0.01-25 K B
C382	87-010-312-080		C-CAP,S 15P-50 J CH
C383	87-010-197-080		C-CAP,S 0.01-25 K B
C384	87-010-402-080		CAP,E 2.2-50 M SME
C386	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C387	87-012-145-080		C-CAP,S 270P-50 J CH
C388	87-010-154-080		C-CAP,S 10P-50 D CH
C421	87-010-402-080		CAP,E 2.2-50 SME
C422	87-010-402-080		CAP,E 2.2-50 SME
C503	87-012-154-080		C-CAP,S 150P-50 CH
C504	87-012-154-080		C-CAP,S 150P-50 CH
C505	87-012-145-080		C-CAP,S 270P-50 CH
C506	87-012-145-080		C-CAP,S 270P-50 CH
C507	87-010-183-080		C-CAP,S 2700P-50 K B
C509	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C510	87-010-177-080		C-CAP,S 820P-50 SL
C511	87-010-177-080		C-CAP,S 820P-50 SL
C512	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C513	87-010-374-080		CAP,E 47-10 SME
C514	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C515	87-010-263-080		CAP,E 100-10 SME
C517	87-010-183-080		C-CAP,S 2700P-50 K B
C527	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C605	87-010-180-080		C-CAP,S 1500P-50 K B
C606	87-010-180-080		C-CAP,S 1500P-50 K B
C611	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C613	87-010-404-080		CAP,E 4.7-50 SME
C614	87-010-404-080		CAP,E 4.7-50 SME
C615	87-010-183-080		C-CAP,S 2700P-50 K B
C619	87-010-263-080		CAP,E 100-10 SME
C620	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C621	87-010-263-080		CAP,E 100-10 SME
C622	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C623	87-010-194-080		C-CAP,S 0.047-25 Z F
C629	87-012-368-010		C-CAP,0.1-50 FZ
C646	87-010-322-080		C-CAP,S 100P-50 J CH
C647	87-010-322-080		C-CAP,S 100P-50 J CH
C701	87-010-381-080		CAP,E 330-16 SME
C702	87-010-404-080		CAP,E 4.7-50 M SME
C703	87-010-197-080		C-CAP,S 0.01-25 K B
C704	87-010-197-080		C-CAP,S 0.01-25 K B
C711	87-010-263-080		CAP,E 100-10 SME
C712	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C713	87-010-197-080		C-CAP,S 0.01-25 K B
C714	87-010-197-080		C-CAP,S 0.01-25 K B
C721	87-010-312-080		C-CAP,S 15P-50 J CH
C722	87-010-312-080		C-CAP,S 15P-50 J CH
C723	87-010-178-080		C-CAP,S 1000P-50 K B
C725	87-010-178-080		C-CAP,S 1000P-50 K B
C727	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C728	87-010-248-080		CAP,E 220-10 SME
C755	87-010-197-080		C-CAP,S 0.01-25 K B
C756	87-010-197-080		C-CAP,S 0.01-25 K B
C757	87-010-318-080		C-CAP,S 47P-50 J CH
C758	87-010-149-080		C-CAP,S 5P-50 CH
C761	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C762	87-010-197-080		C-CAP,S 0.01-25 K B
C763	87-010-194-080		C-CAP,S 0.047-25 Z F
C765	87-010-197-080		C-CAP,S 0.01-25 K B
C766	87-010-197-080		C-CAP,S 0.01-25 K B
C767	87-010-405-080		CAP,E 10-50 M SME
C768	87-010-197-080		C-CAP,S 0.01-25 K B
C769	87-010-408-080		CAP,E 47-50 SME
C770	87-015-821-080		C-CAP, 0.047-50 Z F GR
C771	87-010-407-080		CAP,E 33-50 SME
C772	87-010-194-080		C-CAP,S 0.047-25 Z F
C773	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C774	87-010-263-080		CAP,E 100-10 SME
C775	87-010-404-080		CAP,E 4.7-50 M SME
C777	87-010-400-080		CAP,E 0.47-50 M SME
C778	87-010-401-080		CAP,E 1-50 M SME
C779	87-010-401-080		CAP,E 1-50 M SME
C780	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C781	87-010-405-080		CAP,E 10-50 M SME
C782	87-010-405-080		CAP,E 10-50 M SME
C783	87-015-819-080		C-CAP,0.01-50 K B
C784	87-010-197-080		C-CAP,S 0.01-25 K B
C785	87-010-400-080		CAP,E 0.47-50 M SME
C786	87-010-400-080		CAP,E 0.47-50 M SME
C787	87-010-184-080		C-CAP,S 3300P-50 K B
C788	87-010-184-080		C-CAP,S 3300P-50 K B
C789	87-010-179-080		C-CAP,S 1200P-50 K B
C790	87-010-179-080		C-CAP,S 1200P-50 K B
C791	87-010-405-080		CAP,E 10-50 M SME
C793	87-010-178-080		C-CAP,S 1000P-50 K B
C794	87-010-406-080		CAP,E 22-50 M SME
C795	87-010-596-080		C-CAP,S 0.047-25 R K
C796	87-010-403-080		CAP,E 3.3-50 M SME
C797	87-010-180-080		C-CAP,S 1500P-50 K B
C798	87-010-180-080		C-CAP,S 1500P-50 K B
C799	87-010-194-080		C-CAP,S 0.047-25 Z F
C812	87-010-197-080		C-CAP,S 0.01-25 K B
C814	87-010-197-080		C-CAP,S 0.01-25 K B
C820	87-010-408-080		CAP,E 47-50 SME
C821	87-010-197-080		C-CAP,S 0.01-25 K B
C822	87-010-197-080		C-CAP,S 0.01-25 K B
C823	87-010-197-080		C-CAP,S 0.01-25 K B
C828	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C829	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C940	87-010-197-080		C-CAP,S 0.01-25 K B
C941	87-010-314-080		C-CAP,S 22P-50 CH
C943	87-010-197-080		C-CAP,S 0.01-25 K B
C945	87-010-197-080		C-CAP,S 0.01-25 K B
C947	87-010-197-080		C-CAP,S 0.01-25 K B
C952	87-010-197-080		C-CAP,S 0.01-25 K B
C954	87-010-400-080		CAP,E 0.47-50M SME
C953	87-010-197-080		C-CAP,S 0.01-25 K B
C956	87-010-263-080		CAP,E 100-10 SME
C959	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C960	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C962	87-010-401-080		CAP,E 1-50 M SME
CF801	87-008-261-010		FLTR,CFSFE10.7MA5
CF802	87-008-261-010		FLTR,CFSFE10.7MA5
FFE801	A8-7ZA-291-030		7ZA-2 YFEUNM
J252	87-A60-024-010		JACK,DIA6.3 BLK ST W/SW KM
J253	87-099-474-010		JACK,PIN 3P BLK W/SW
J254	87-A60-238-010		TERMINAL,SP 4P (MSC)
J601	87-A60-426-010		JACK,PIN 6P
J801	87-A60-202-010		TERMINAL,ANT 4P MSP-154V-02
J940	81-754-629-010		CONNECTOR, XH 2P
L201	87-003-383-010		COIL,1UH K
L202	87-003-383-010		COIL,1UH K
L301	87-A50-049-010		COIL,TRAP 85K(COI)
L302	87-A50-049-010		COIL,TRAP 85K(COI)
L351	87-007-342-010		COIL,OSC 85KHZ BIAS
L601	87-003-231-010		C-COIL,1UH K
L770	87-005-849-080		COIL,10UH K CECS
L771	87-A50-165-010		COIL,FM DET-N(TOK)

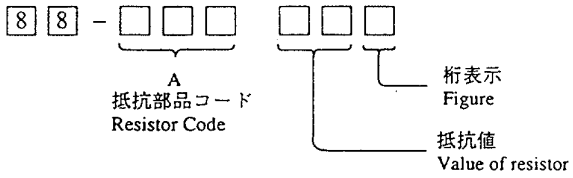
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
L772	87-A90-052-010		FLTR,CFMT-450A (TOK)
L832	87-005-847-080		COIL,2.2UH K CECS
L941	87-A50-022-080		COIL,ANT SW C01
L942	87-A50-173-080		COIL,OSC SW-N C01
L943	87-005-372-080		COIL,1MH K LA103
L944	87-A50-159-080		COIL,10MH
L981	87-NF4-666-010		COIL,AM PACK3(TOK)
⚠PR201	87-A90-195-080		PROTECTOR,7A 491SERIES 125V
⚠PR202	87-A90-195-080		PROTECTOR,7A 491SERIES 125 V
R123	87-022-200-080		RES,M/F 0.56-1W J
R229	87-A00-257-080		RES,M/F 0.15-1W J
R230	87-A00-257-080		RES,M/F 0.15-1W J
RY101	87-045-389-010		RELAY,12V OSA-SS-212DM5
RY201	87-045-382-010		RELAY,12V OUAZ-SH-112L
SFR301	87-024-438-080		SFR,220K H RH063MC
SFR302	87-024-438-080		SFR,220K H RH063MC
SFR303	87-024-438-080		SFR,220K H RH063MC
SFR304	87-024-438-080		SFR,220K H RH063MC
SFR351	87-024-436-080		SFR,47K H RH063MC
SFR352	87-024-436-080		SFR,47K H RH063MC
TC941	87-011-220-080		TRIMMER,CER 20P 6.15X5.9
TC942	87-011-221-080		TRIMMER,CER 30P 6.15X5.9
TH201	87-A90-221-010		C-THMS,100K
TH202	87-A90-221-010		C-THMS,100K
W1	85-NF5-628-010		F-CABLE,7P-2.5
X721	87-A70-061-010		VIB,XTAL 4.500MHZ CSA-309
X771	87-030-354-010		VIB,CER 450KHZ BFU
FRONT C.B			
C101	87-010-198-080		C-CAP,S 0.022-25 K B
C102	87-010-198-080		C-CAP,S 0.022-25 K B
C103	87-010-197-080		C-CAP,S 0.01-25 K B
C104	87-010-312-080		C-CAP,S 15P-50 J CH
C105	87-010-316-080		C-CAP,S 33P-50 J CH
C106	87-010-320-080		C-CAP,S 68P-50 J CH
C107	87-012-157-080		C-CAP,S 330P-50 J CH GRM
C108	87-010-498-040		CAP,E 10-16M 5L SRE
C109	87-010-494-040		CAP,E 1-50 5L SRE
C110	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C111	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C112	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C113	87-A10-189-040		CAP,E 220-10 M
C114	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C115	87-010-178-080		C-CAP,S 1000P-50 K B
C116	87-010-401-040		CAP,E 1-50 M SME
C117	87-010-550-040		CAP,E 100-6.3 5L SRE
C118	87-010-194-080		C-CAP,S 0.047-25 Z F
C119	87-010-408-040		CAP,E 47-50 M SME
C120	87-010-404-040		CAP,E 4.7-50 SME
C121	87-010-404-040		CAP,E 4.7-50 SME
C122	87-010-194-080		C-CAP,S 0.047-25 Z F
C123	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C124	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C127	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C128	87-010-178-080		C-CAP,S 1000P-50 K B
C351	87-012-158-080		C-CAP,S 390P-50 J CH GRM
C352	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C353	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C354	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C355	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C356	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C357	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C403	87-010-596-080		C-CAP,S 0.047-16 K R
C404	87-010-596-080		C-CAP,S 0.047-16 K R
C405	87-010-401-040		CAP,E 1-50 M SME
C406	87-010-401-040		CAP,E 1-50 M SME
C407	87-010-184-080		C-CAP,S 3300P-50 K B
C408	87-010-184-080		C-CAP,S 3300P-50 K B
C409	87-010-592-080		C-CAP,S 0.022-16 K R
C410	87-010-592-080		C-CAP,S 0.022-16 K R
C411	87-016-463-080		C-CAP,0.33-16 K B
C412	87-016-463-080		C-CAP,0.33-16 K B
C413	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C414	87-010-374-040		CAP,E 47-10 SME
C415	87-010-374-040		CAP,E 47-10 SME
C416	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C417	87-016-081-080		C-CAP,S 0.1-16 K R
C418	87-010-405-040		CAP,E 10-50 M SME
C501	87-010-319-080		C-CAP,S 56P-50 J CH
C502	87-010-319-080		C-CAP,S 56P-50 J CH
C503	87-012-393-080		C-CAP,S 0.22-16 K W5R CM/CB
C504	87-010-197-080		C-CAP,S 0.01-25 K B
C505	87-010-180-080		C-CAP,S 1500P-50 K B
C506	87-010-213-080		C-CAP,S 0.015-25K B
C507	87-010-213-080		C-CAP,S 0.015-25K B
C508	87-010-197-080		C-CAP,S 0.01-25 K B
C509	87-010-181-080		C-CAP,S 1800P-50 K B
C510	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C512	87-010-374-040		CAP,E 47-10 SME
C513	87-010-494-040		CAP,E 1-50 5L SRE
C514	87-010-494-040		CAP,E 1-50 5L SRE
C515	87-010-183-080		C-CAP,S 2700P-50 K B
C516	87-010-183-080		C-CAP,S 2700P-50 K B
C518	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C519	87-015-677-040		CAP,E 100-6.3 M 7L SRA
C521	87-018-209-040		CAP,TC-U 0.1-50 FZ
C523	87-012-393-080		C-CAP,S 0.22-16 K W5R CM/CB
C601	87-010-560-040		CAP,E 10-50 M 5L MA
C602	87-010-186-080		C-CAP,S 4700P-50 K B
C603	87-010-498-040		CAP,E 10-16 M 5L SRE
C604	87-010-499-040		CAP,E 22-6.3 M 5L SRE
C605	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C607	87-010-321-080		C-CAP,S 82P-50 J CH
C608	87-010-196-080		C-CAP,S 0.1-25 Z F C2012
C609	87-010-491-040		CAP,E 0.22-50 5L SRE
C611	87-010-177-080		C-CAP,S 820P-50 J SL
C614	87-010-248-040		CAP,E 220-10 M SME
FB601	87-008-372-080		FLTR,EMIBL01 RN1
FL101	87-NF7-603-010		FL,BJ532GK
J601	82-NF7-630-010		JACK,3.5MO
J602	82-NF7-630-010		JACK,3.5MO
L501	87-005-448-080		COIL,220UH K FLR50
S301	87-A90-164-080		SW,TACT SKQNAB(N)
S302	87-A90-164-080		SW,TACT SKQNAB(N)
S304	87-A90-164-080		SW,TACT SKQNAB(N)
S305	87-A90-164-080		SW,TACT SKQNAB(N)
S306	87-A90-164-080		SW,TACT SKQNAB(N)
S307	87-A90-164-080		SW,TACT SKQNAB(N)
S308	87-A90-164-080		SW,TACT SKQNAB(N)
S309	87-A90-164-080		SW,TACT SKQNAB(N)
S310	87-A90-164-080		SW,TACT SKQNAB(N)
S311	87-A90-164-080		SW,TACT SKQNAB(N)
S312	87-A90-164-080		SW,TACT SKQNAB(N)
S313	87-A90-164-080		SW,TACT SKQNAB(N)
S314	87-A90-164-080		SW,TACT SKQNAB(N)
S315	87-A90-164-080		SW,TACT SKQNAB(N)
S316	87-A90-164-080		SW,TACT SKQNAB(N)
S317	87-A90-164-080		SW,TACT SKQNAB(N)
S318	87-A90-164-080		SW,TACT SKQNAB(N)
S319	87-A90-164-080		SW,TACT SKQNAB(N)
S320	87-A90-164-080		SW,TACT SKQNAB(N)
S326	87-A90-164-080		SW,TACT SKQNAB(N)
S327	87-A90-164-080		SW,TACT SKQNAB(N)
S328	87-A90-164-080		SW,TACT SKQNAB(N)
S329	87-A90-164-080		SW,TACT SKQNAB(N)
S331	87-A90-164-080		SW,TACT SKQNAB(N)
S332	87-A90-164-080		SW,TACT SKQNAB(N)
S336	87-A90-164-080		SW,TACT SKQNAB(N)
S337	87-A90-164-080		SW,TACT SKQNAB(N)

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
S338	87-A90-164-080		SW,TACT SKQNAB(N)
SW101	87-A90-535-010		SW,RTRY EC16B24304-WO
X101	87-A70-070-080		VIB,CER 5.76MHZ CRHF
PT C.B			
⚠F101	87-035-368-010		FUSE,4A 250V T
⚠FC1	87-033-147-010		FUSE CLAMP,MT-20
⚠FC2	87-033-147-010		FUSE CLAMP,MT-20
⚠PT101	87-NF7-606-010		PT,7NF-7 HR
⚠SW1	87-A90-165-010		SW,SL 1-2-3 SWS2301
⚠T1	87-A60-317-010		TERMINAL, 1P MSC
⚠T2	87-A60-317-010		TERMINAL, 1P MSC
AC2 C.B			
⚠PR1	87-A90-195-080		PROTECTOR, 7A 491SERIES 125V
⚠PR2	87-A90-195-080		PROTECTOR, 7A 491SERIES 125V
⚠PR5	87-026-682-080		PROTECTOR,10A 491 SERIES 60V
⚠PR6	87-026-682-080		PROTECTOR,10A 491 SERIES 60V

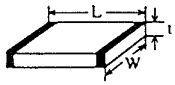
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
DECK C.B			
CON502	87-099-756-019		CONN, 15P 9604 S F
SFR1	87-024-581-019		SFR,3.3K DIA 6H
SOL1	82-ZM1-618-010		SOL ASSY, 27
SOL2	82-ZM1-618-010		SOL ASSY, 27
SW1	87-A90-248-019		SW,MICRO ESE11SH2CXQ
SW2	87-A90-248-019		SW,MICRO ESE11SH2CXQ
SW3	87-A90-248-019		SW,MICRO ESE11SH2CXQ
SW4	87-036-110-010		SW,MICRO SPPB62
SW5	87-036-110-010		SW,MICRO SPPB62
SW6	87-036-110-010		SW,MICRO SPPB62
SW8	87-A90-248-019		SW,MICRO ESE11SH2CXQ
SW9	87-036-110-010		SW,MICRO SPPB62
W001	82-ZM3-601-019		RBN,CORD,4P-75
HEAD-1 C.B			
	85-ZM3-602-010		PWB,FLEX A
HEAD-2 C.B			
	85-ZM3-602-010		PWB,FLEX A

○ 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

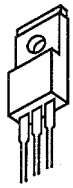
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm) 外形／Form	L	W	t	抵抗コード ：A Resistor Code: A
1／16W	1608	±5%	CJ		1.6	0.8	0.45	108
1／10W	2125	±5%	CJ		2	1.25	0.45	118
1／8W	3216	±5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION

KTA1266GR
KTC3198GR

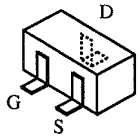
CSD1489B
CSB1058B

2SA933S

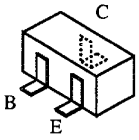


2SK2723

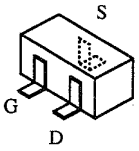
2SB1370
FN1016
FP1016



2SK2158



2SC2714
2SC3052
2SA1235
CSA1362
CSD1306
CMBT5551
RN1410
RT1P144
RT1P141
RT1N141
RT1N144



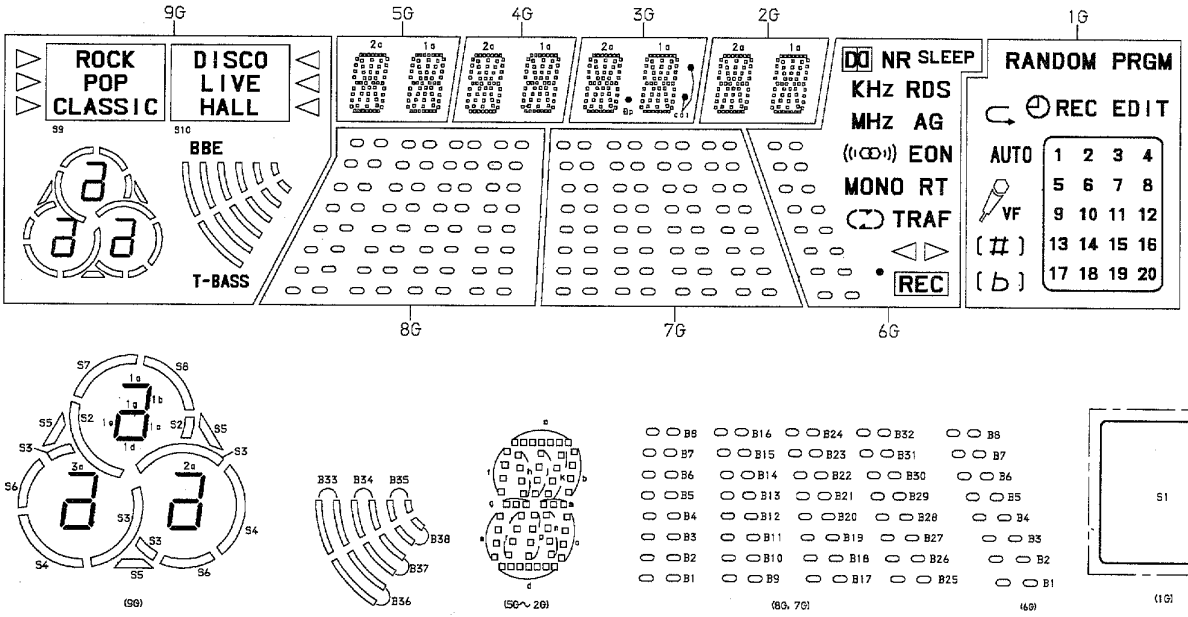
2SK543

C2N5401

FL GRID ASSIGNMENT AND ANODE CONNECTION

FL, BJ532GK

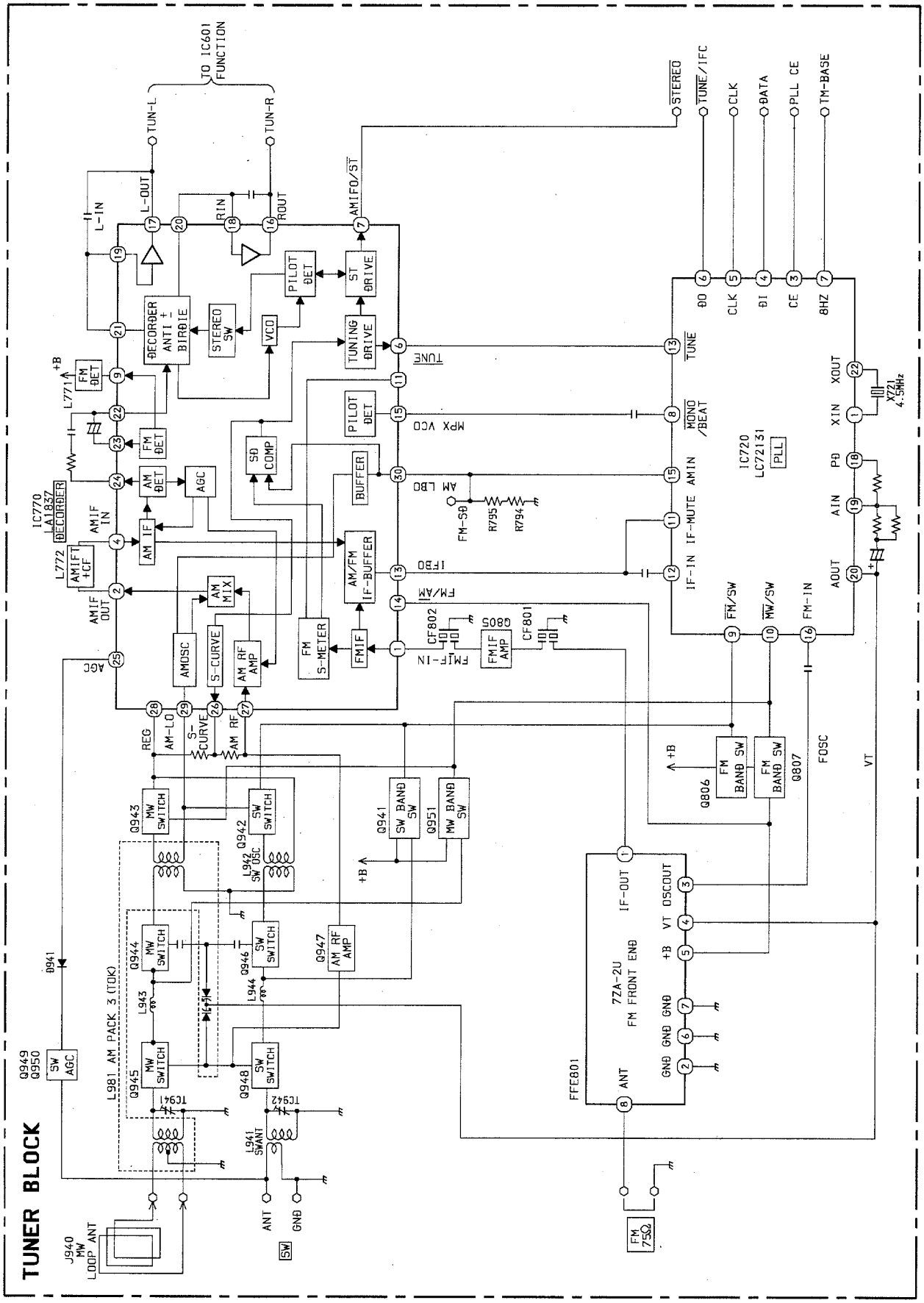
GRID ASSIGNMENT



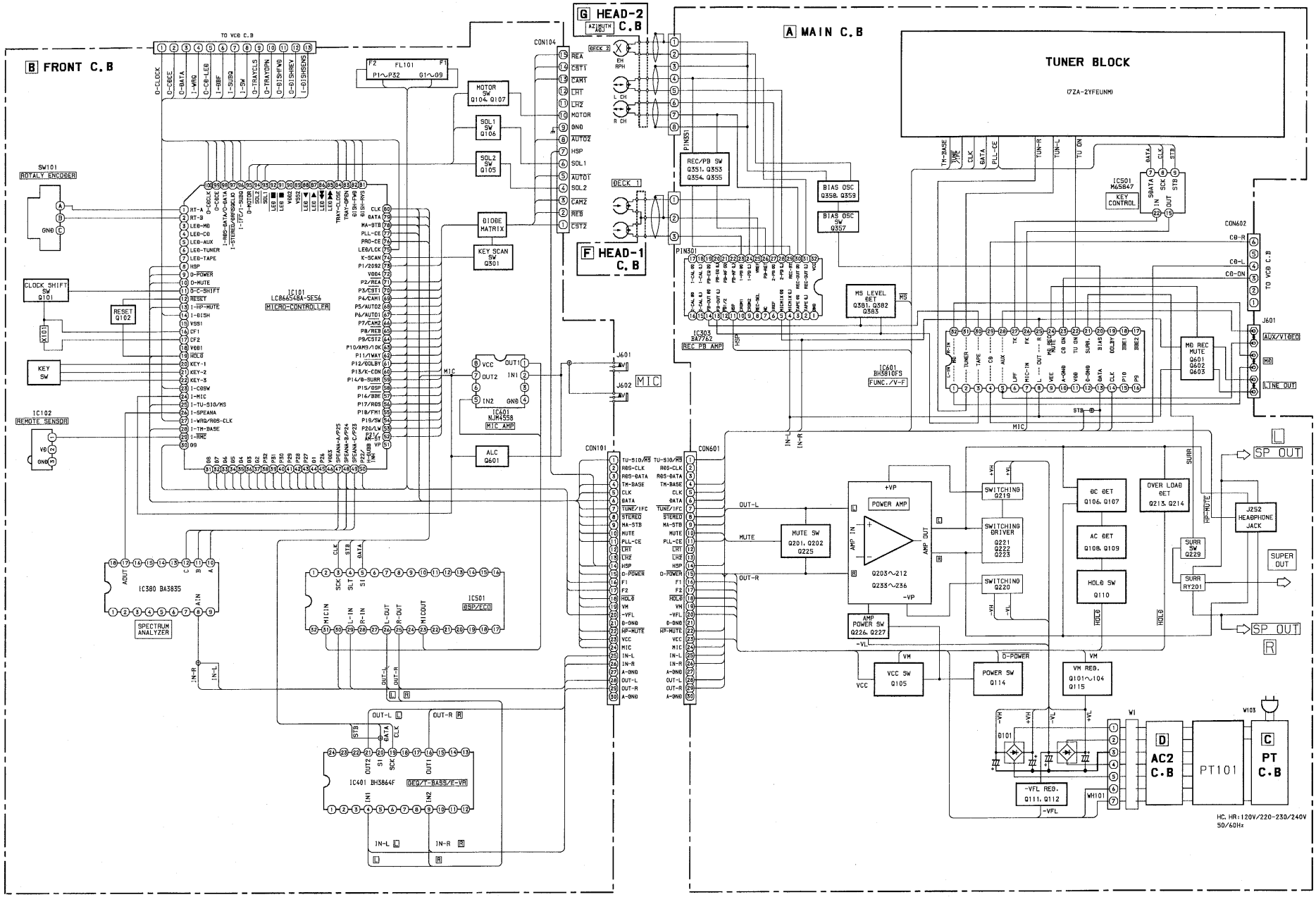
ANODE CONNECTION

	9G	8G, 7G	6G	5G, 4G	3G	2G	1G
P1	S8	B32	▷	-	COIL(DN)	-	RANDOM
P2	S2	B24	◁	1d	1d	1d	-
P3	1b	B16	SLEEP	1n	1n	1n	PRGM
P4	1c	B8	B8	1p	1p	1p	EDIT
P5	1e	B31	○	1r	1r	1r	1
P6	1a, 1d, 1g	B23	REC	1e	1e	1e	2
P7	2b	B15	KHz	1c	1c	1c	3
P8	2c	B7	B7	1g	1g	1g	4
P9	2e	B30	MHz	1m	1m	1m	5
P10	2a, 2d, 2g	B22	-	1f	1f	1f	6
P11	3b	B14	DOLBY NR	1b	1b	1b	7
P12	3c	B6	B6	1k	1k	1k	8
P13	3e	B29	RDS	1j	1j	1j	9
P14	3a, 3d, 3g	B21	-	1h	1h	1h	10
P15	S3	B13	-	1a	1a	1a	11
P16	S5	B5	B5	-	COIL(UP)	-	12
P17	S7	B28	-	-	Dp	-	13
P18	S4	B20	-	2d	2d	2d	14
P19	S6	B12	-	2n	2n	2n	15
P20	(HALL) ◁	B4	B4	2p	2p	2p	16
P21	(LIVE) ◁	B27	AG	2r	2r	2r	17
P22	(DISCO) ◁	B19	((EON))	2e	2e	2e	18
P23	▷ (CLASSIC)	B11	EON	2c	2c	2c	19
P24	▷ (POP)	B3	B3	2g	2g	2g	20
P25	▷ (ROCK)	B26	RT	2m	2m	2m	AUTO
P26	B36	B18	MONO	2f	2f	2f	VF
P27	B37	B10	TRAF	2b	2b	2b	◴
P28	B38	B2	B2	2k	2k	2k	REC
P29	B33	B25	)	2j	2j	2j	⊂→
P30	B34	B17	↙	2h	2h	2h	[(#)]
P31	B35	B9	(	2a	2a	2a	[(♭)]
P32	S9 T-BASS	B1	B1	-	-	-	S1
P33	S10	-	-	-	-	-	-
P34	BBE	-	-	-	-	-	-
P35	-	-	-	-	-	-	♭ #

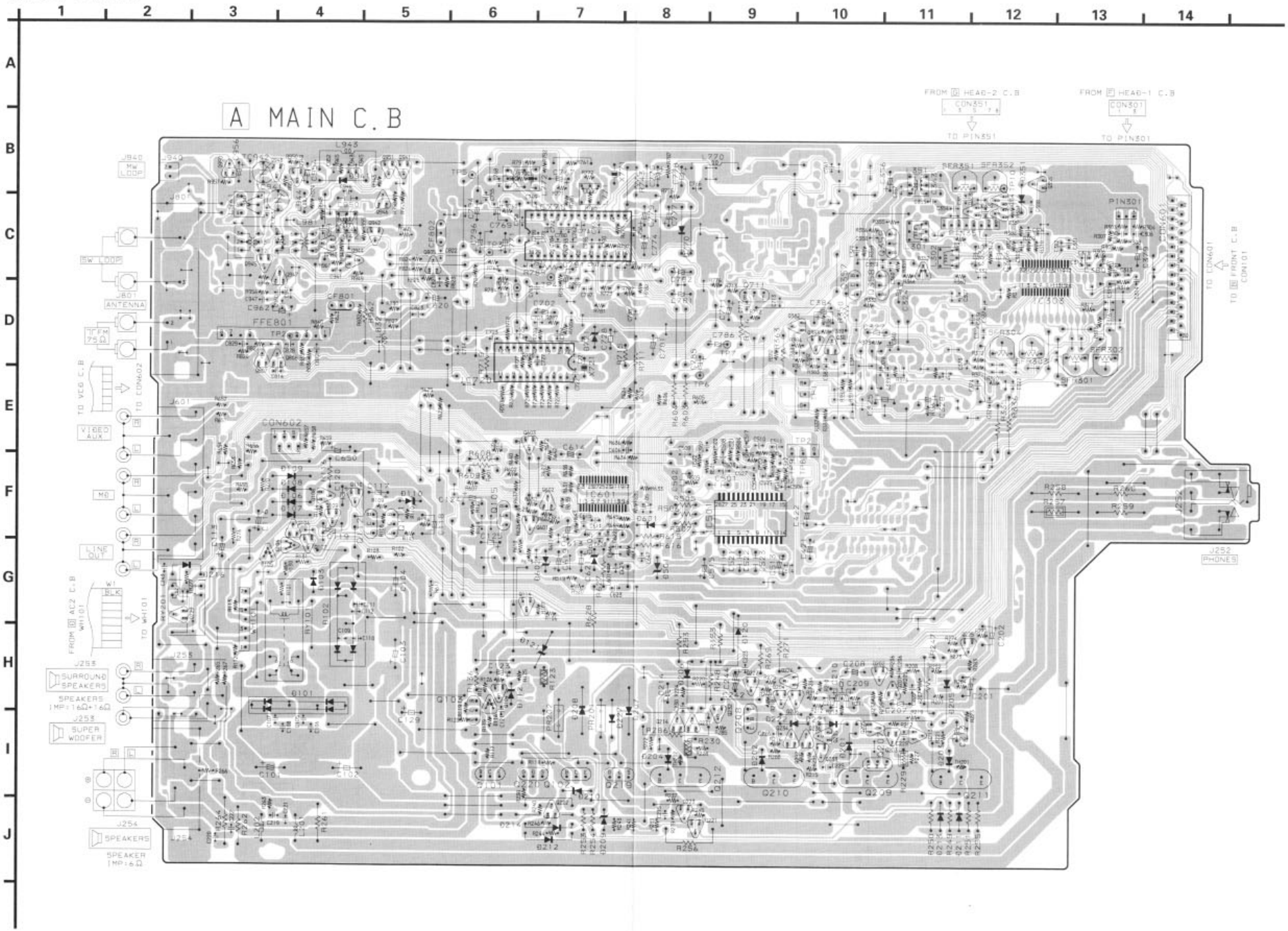
BLOCK DIAGRAM – 1 (TUNER)



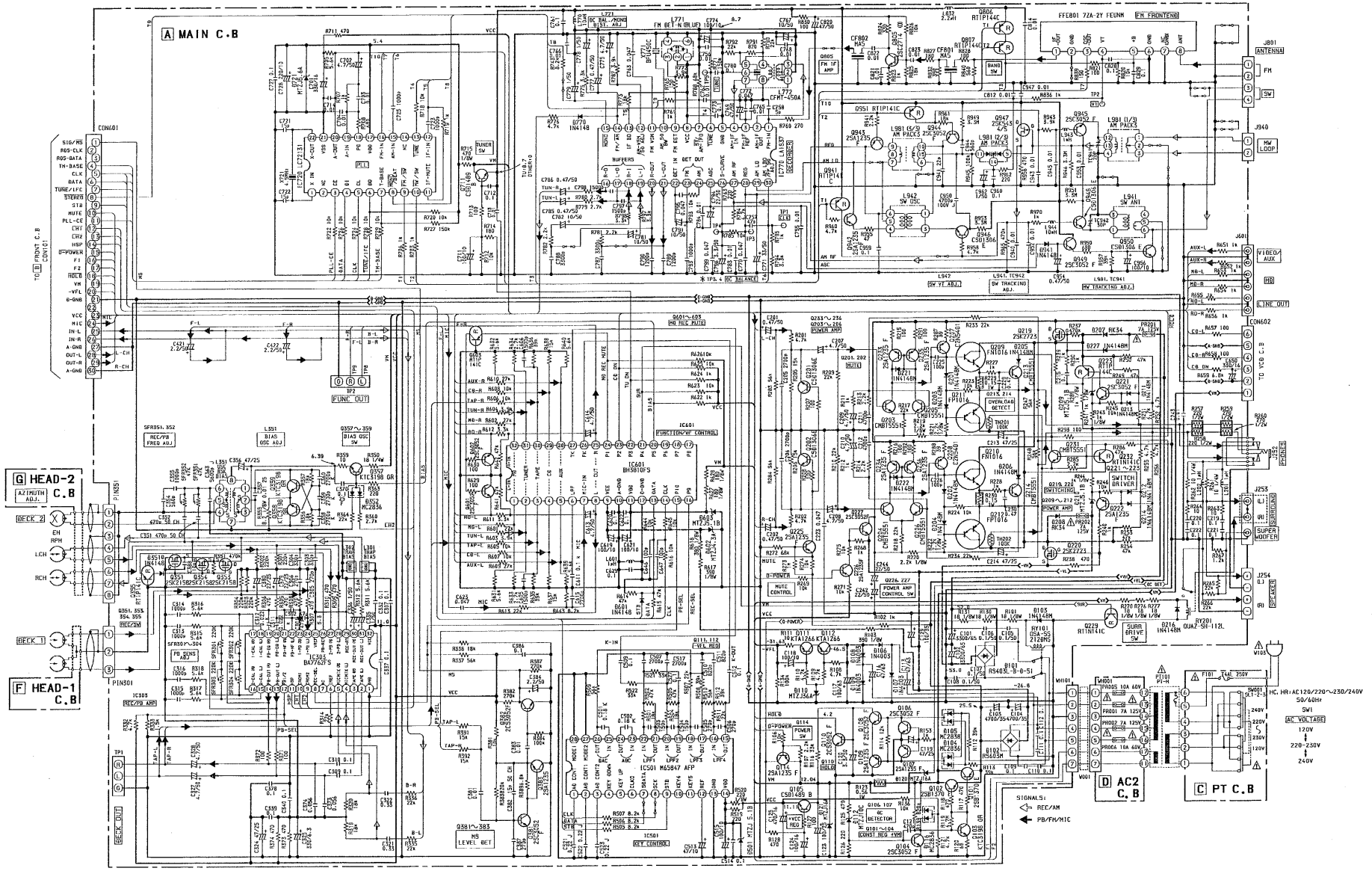
BLOCK DIAGRAM – 2 (MAIN / FRONT)



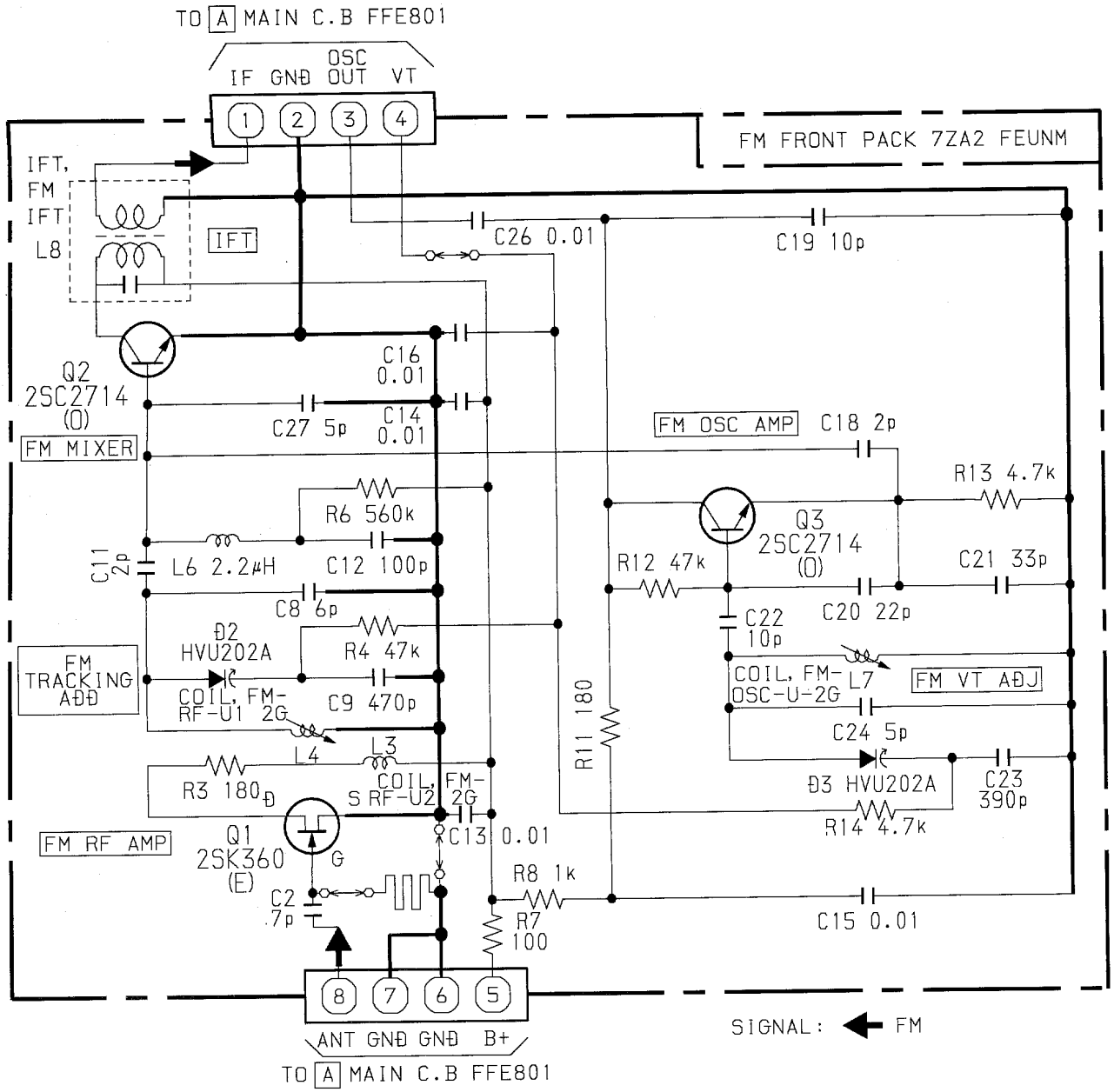
WIRING – 1 (MAIN)



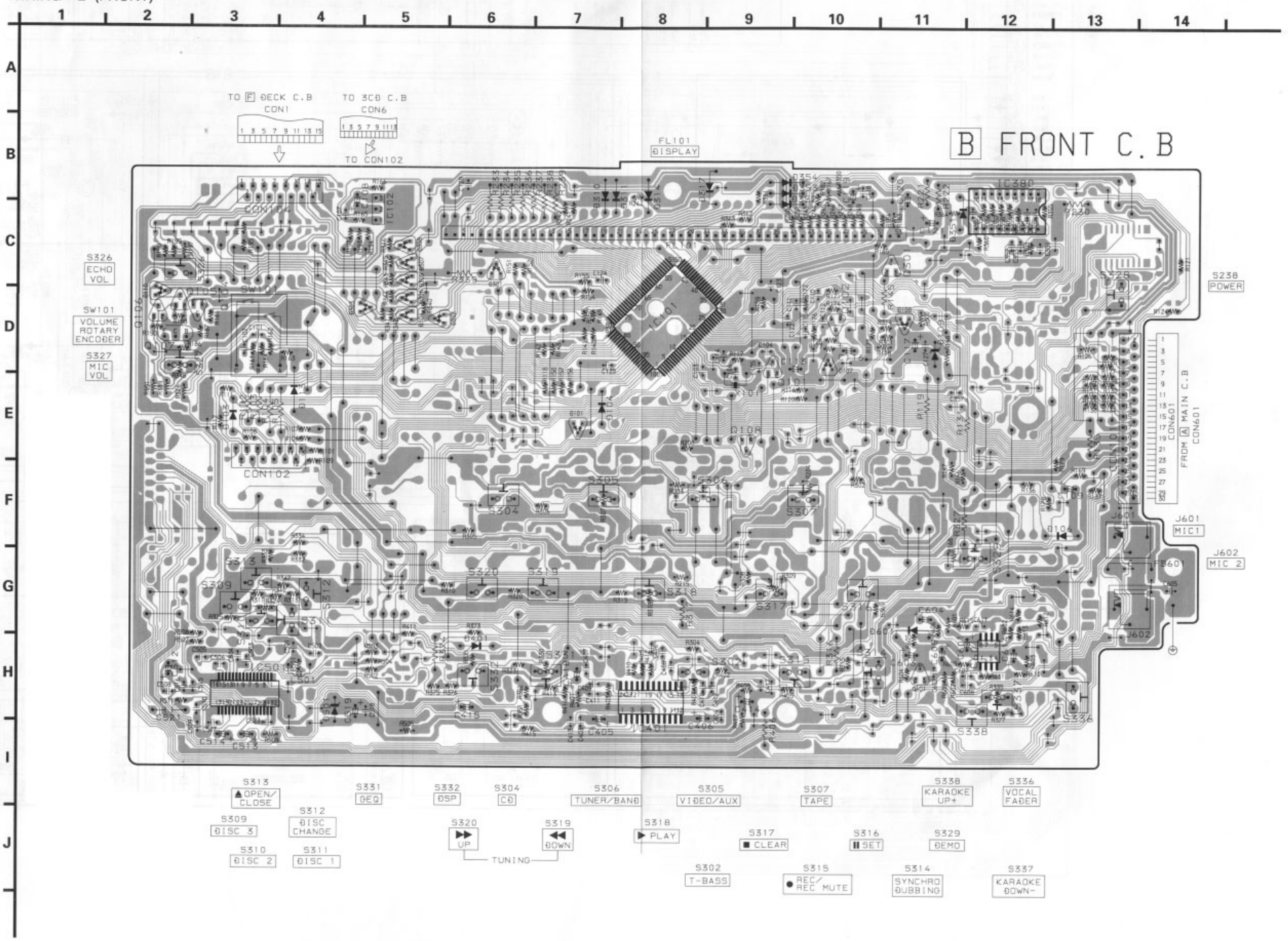
SCHEMATIC DIAGRAM – 1 (MAIN : HC, HR)



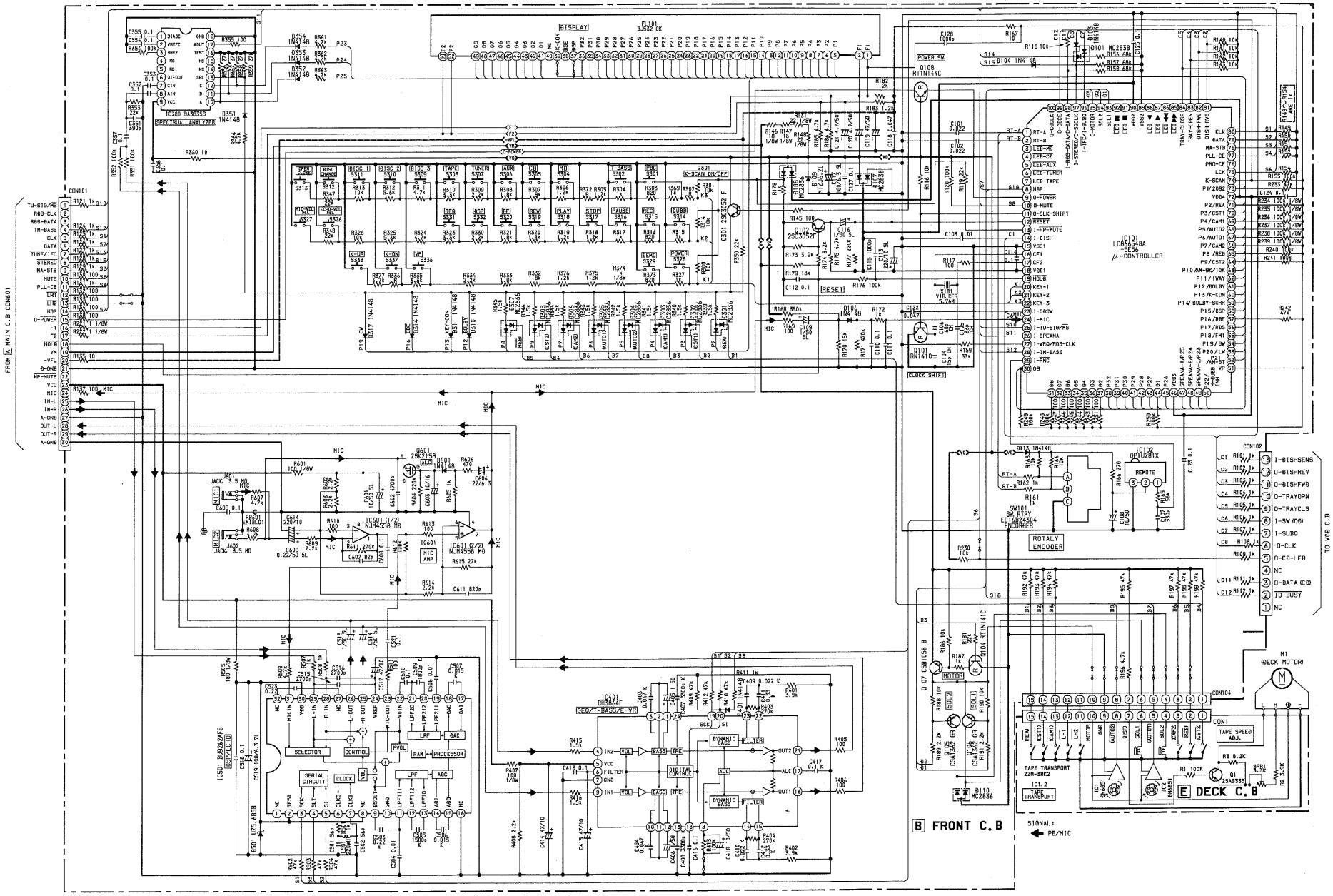
SCHEMATIC DIAGRAM – 2 (TUNER : 7ZA - 2)



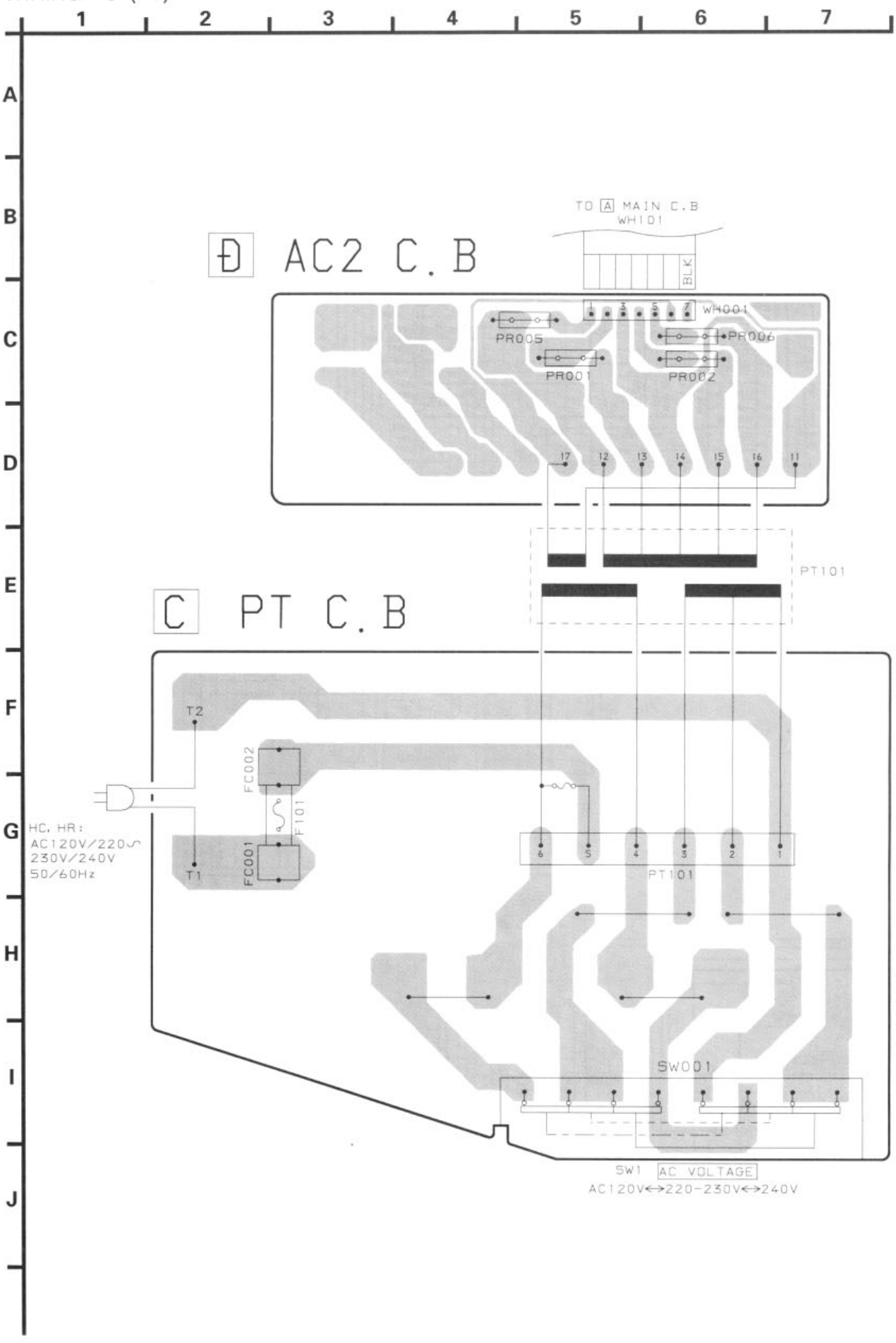
WIRING – 2 (FRONT)



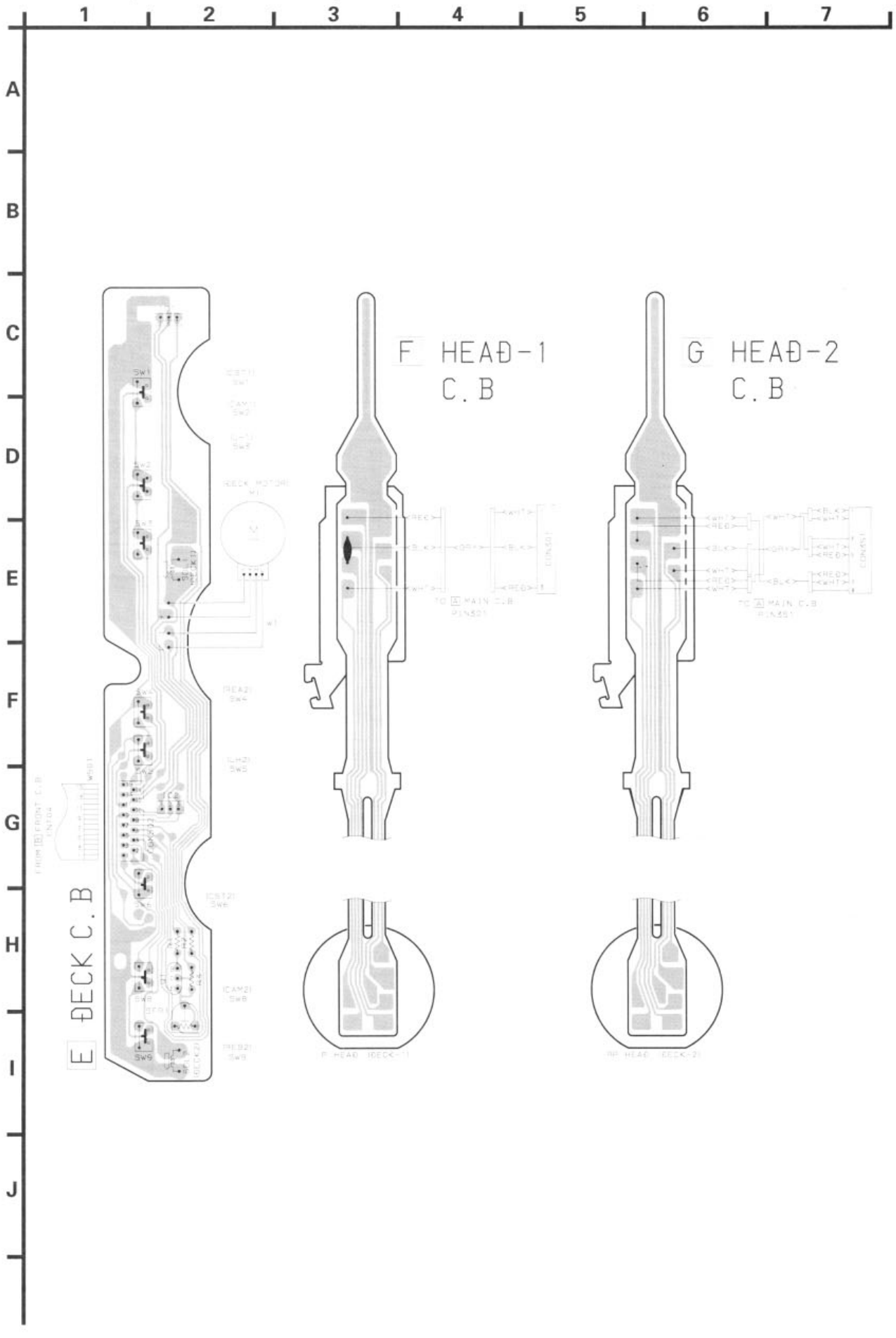
SCHEMATIC DIAGRAM – 3 (FRONT)



WIRING – 3 (PT)


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
TO A MAIN C.B
WH101
BLK
Đ AC2 C.B
WH001
PR005
PR006
PR001
PR002
17
12
13
14
15
16
11
PT101
C PT C.B
T2
FC002
F101
FC001
T1
HC, HR:
AC120V/220~
230V/240V
50/60Hz
6
5
4
3
2
1
PT101
SW001
SW1 AC VOLTAGE
AC120V↔220-230V↔240V

WIRING – 4 (DECK : 2ZM - 3MK2)



IC DESCRIPTION

IC, LC866548A-5E56

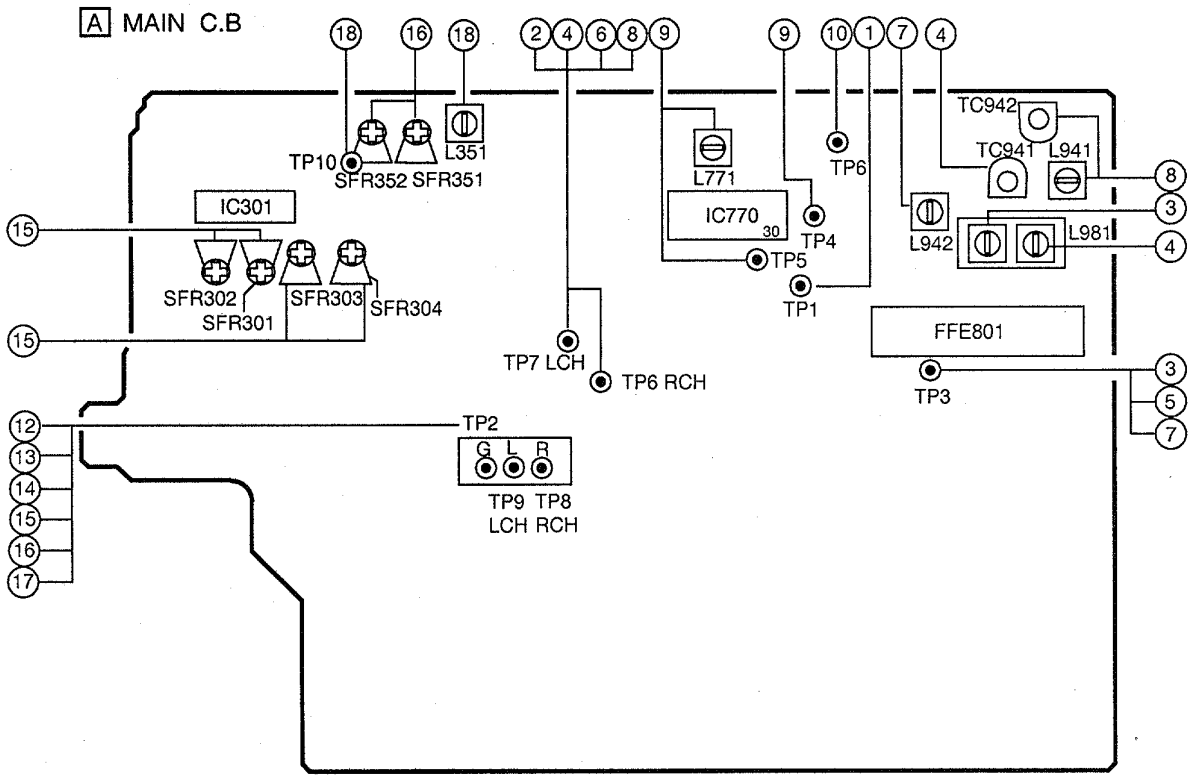
Pin No.	Pin Name	I/O	Description
1	RT-A	I	Rotary encoder A input.
2	RT-B	I	Rotary encoder B input.
3	$\overline{\text{LED-MD}}$	O	"MD" LED $\overline{\text{ON}}$/OFF output.
4	$\overline{\text{LED-CD}}$	O	"CD " LED $\overline{\text{ON}}$/OFF output.
5	$\overline{\text{LED-AUX}}$	O	"AUX" LED $\overline{\text{ON}}$/OFF output.
6	$\overline{\text{LED-TUNER}}$	O	"TUNER" LED $\overline{\text{ON}}$/OFF output.
7	$\overline{\text{LED-TAPE}}$	O	"TAPE" LED $\overline{\text{ON}}$/OFF output.
8	HSP	O	Tape deck motor high speed ON/$\overline{\text{OFF}}$ output.
9	$\overline{\text{O-POWER}}$	O	System power supply $\overline{\text{ON}}$/OFF output.
10	O-MUTE	O	System mute ON/$\overline{\text{OFF}}$ output.
11	$\overline{\text{O-CLK-SHIFT}}$	O	U-COM clock shift output.
12	$\overline{\text{RESET}}$	I	Reset input.
13	$\overline{\text{I-HP-MUTE}}$	–	Not connected.
14	I-DISH	I	CD turntable photo sensor A/D converter input.
15	VSS 1	–	GND.
16	CF 1	–	5.76MHz oscillator circuit.
17	CF 2	–	
18	VDD 1	–	Power supply input.
19	$\overline{\text{HOLD}}$	I	Power failure detected input "1" to stop clock and main memory.
20	KEY-1	I	KEY input. (A/D)
21	KEY-2	I	
22	KEY-3	I	
23	I-CD SW	I	CD mechanical switch A/D converter input.
24	I-MIC	I	Microphone input for AUTO VF display.
25	I-TU-SIG/$\overline{\text{MS}}$	I	Tuner signal and deck music sensor signal input.
26	I-SPEANA	I	A/D input for spectrum analyzer display.
27	I-WRQ/RDS-CLK	I	CD WRQ input . TUNER RDS CLOCK input.
28	I-TM-BASE	I	REFERENCE CLOCK input for timer watch.
29	I-$\overline{\text{RMC}}$	I	System remote control signal input.
30~37	G9~G2	O	FL GRID output G2~G9.
38~43	P32~P27	O	FL SEGMENT output P27~P32.
44	G1	O	FL grid output G1.
45	P26	–	FL SEGMENT output P26.
46	VDD3	–	Power supply input.
47	SPEANA-A/P25	O	Spectrum analyzer band switching output /FL segment P25 output.
48	SPEANA-B/P24	O	Spectrum analyzer band switching output /FL segment P24 output.
49	SPEANA-C/P23	O	Spectrum analyzer band switching output /FL segment P23 output.
50	P22/H-DUBB INH	I /O	FL segment P22 output / high dubbing inhibit input to diode.
51	VP	–	Power supply input for FL display.
52	P21/AM-ST	I /O	FL segment P21 output / AM stereo input to diode.
53	P20/LW	I/O	FL segment P20 output / LW mode data input to diode.
54	P19/SW	I/O	FL segment P19 output / SW mode data input to diode.

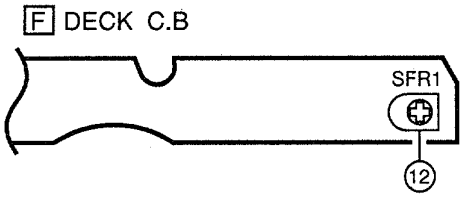
Pin No.	Pin Name	I/O	Description
55	P18/FM 1	I/O	FL segment P18 output / FM1 (OIRT) data input to diode.
56	P17/RDS	I/O	FL segment P17 output / RDS data input to diode.
57	P16/BBE	I/O	FL segment P16 output / BBE data input to diode.
58	P15/DSP	I/O	FL segment P15 output / DSP data input to diode.
59	P14/DOLBY-SURR	I/O	FL segment P14 output / DOLBY-SURR data input to diode.
60	P13/K-CON	I/O	FL segment P13 output / K-CON data input to diode.
61	P12/DOLBY	I/O	FL segment P12 output / DOLBY data input to diode.
62	P11/WAY	I/O	FL segment P11 output / DECK/WAY MECHA data input to diode.
63	P10/AM-9K/10K	I/O	FL segment P10 output / INITIAL AM 10 kHz step data input to diode.
64	P9/CST 2	I/O	FL segment P9 output / DECK2 cassette detect switch data input.
65	P8/REB	I/O	FL segment P8 output / DECK2 side-B record OK switch data input.
66	P7/CAM 2	I/O	FL segment P7 output / DECK2 CAM switch data input.
67	P6/AUTO 1	I/O	FL segment P6 output / DECK1 AUTO stop signal input.
68	P5/AUTO 2	I/O	FL segment P5 output / DECK2 AUTO stop signal input.
69	P4/CAM 1	I/O	FL segment P4 output / DECK1 CAM switch data input.
70	P3/CST 1	I/O	FL segment P3 output / DECK1 cassette detect switch data input.
71	P2/REA	I/O	FL segment P2 output / DECK2 side A record OK switch data input.
72	VDD 4	–	Power supply input.
73	P1/2092	I/O	FL segment P1 output / SHIFT resistor IC 2092 data input to diode.
74	K-SCAN	O	Switch SCAN timing output.
75	L CK	O	Latch clock output for front shift resistor.
76	PRO-CE	O	PRO LOGIC IC chip enable output.
77	PLL-CE	O	PLL IC chip enable output.
78	MA-STB	O	Latch strobe output for MAIN PWB.
79	DATA	O	DATA output for MAIN, FORNT, PROLOGIC PWB.
80	CLK	O	CLOCK output for MAIN,FORNT, PROLOGIC PWB.
81	DISH-RVS	O	CD turntable reverse rotation output.
82	DISH-FWD	O	CD turntable forward rotation output.
83	TRAY-OPEN	O	CD TRAY OPEN data output.
84	TRAY-CLOSE	O	CD TRAY CLOSE data output.
85	$\overline{\text{LED}}$ ▶▶	O	▶▶ LED $\overline{\text{ON}}$/OFF output.
86	$\overline{\text{LED}}$ ◀◀	O	◀◀ LED $\overline{\text{ON}}$/OFF output.
87	$\overline{\text{LED}}$ ▶	O	▶ LED $\overline{\text{ON}}$/OFF output.
88	$\overline{\text{LED}}$ ◀	O	◀ LED $\overline{\text{ON}}$/OFF output.
89	VSS 2	–	GND.
90	VDD 2	–	Power supply input.
91	$\overline{\text{LED}}$ ■	O	■ LED $\overline{\text{ON}}$/OFF output.
92	$\overline{\text{LED}}$ ❚❚	O	❚❚ LED $\overline{\text{ON}}$/OFF output.
93	$\overline{\text{SOL 1}}$	O	DECK 1 Solenoid output.
94	$\overline{\text{SOL 2}}$	O	DECK 2 Solenoid output.
95	O-MOTOR	O	DECK MOTOR ON/$\overline{\text{OFF}}$ output.
96	I-IFC/I-SUB Q	I	Tune IF count serial data input /CD SUB Q data input.

Pin No.	Pin Name	I/O	Description
97	I-STEREO/O-SQCLK	I/O	Tuner stereo detected input/CD SQ CLOCK output.
98	I-RDS-DATA/O-DATA	I/O	RDS data input/CD data output.
99	O-CD CE	O	CD CE output.
100	O-CD CLK	O	CD CLOCK output.

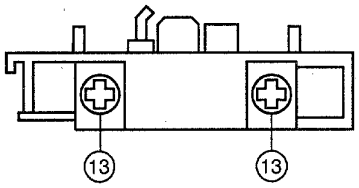
IC, LC72131

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>XIN</td><td rowspan="2">I/O</td><td rowspan="2">A crystal oscillator (7.2MHz) is connected between these pins.</td></tr>
<tr><td>22</td><td>XOUT</td></tr>
<tr><td>2</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>3</td><td>CE</td><td>I</td><td>To enable the IC. Active "H".</td></tr>
<tr><td>4</td><td>DI</td><td>I</td><td>Digital data input from CPU (LC866548V-5E15) when relevant key is operated. Active "H".</td></tr>
<tr><td>5</td><td>CLK</td><td>I</td><td>To clock in the data DI.</td></tr>
<tr><td>6</td><td>DO</td><td>O</td><td>Digital data output to CPU (LC866548V-5E15).</td></tr>
<tr><td>7</td><td>TM-BASE</td><td>O</td><td>Outputs a reference clock signal (8Hz) for the clock.</td></tr>
<tr><td>8</td><td>$\overline{\text{MONO}}$ / BEAT</td><td>O</td><td>Outputs "H" when MONO / BEAT is switched.</td></tr>
<tr><td>9</td><td>$\overline{\text{FM}}$ / AM</td><td>O</td><td>Output "L" or "H" as follows:
<table>
<tr><th colspan="2">2 BAND</th><th colspan="3">3 BAND</th><th colspan="3">3 BAND</th></tr>
<tr><td>AM</td><td>FM</td><td>LW</td><td>MW</td><td>FM</td><td>MW</td><td>SW</td><td>FM</td></tr>
<tr><td>H</td><td>L</td><td>H</td><td>H</td><td>L</td><td>H</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>10</td><td>$\overline{\text{MW}}$</td><td>O</td><td>Outputs "L" or "H" as follows:
<table>
<tr><th colspan="2">2 BAND</th><th colspan="3">3 BAND</th><th colspan="3">3 BAND</th></tr>
<tr><td>AM</td><td>FM</td><td>LW</td><td>MW</td><td>FM</td><td>MW</td><td>SW</td><td>FM</td></tr>
<tr><td>L</td><td>L</td><td>H</td><td>L</td><td>L</td><td>L</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>11</td><td>IF-MUTE</td><td>O</td><td>To control internal counter.</td></tr>
<tr><td>12</td><td>IFIN</td><td>I</td><td>General purpose counter input.</td></tr>
<tr><td>13</td><td>TUNE</td><td>I</td><td>Receives "L" when station is tuned.</td></tr>
<tr><td>14</td><td>NC</td><td>–</td><td>Not used.</td></tr>
<tr><td>15</td><td>A MIN</td><td>I</td><td>Receives the AM local oscillator frequency signal.</td></tr>
<tr><td>16</td><td>F MIN</td><td>I</td><td>Receives the FM local oscillator frequency signal.</td></tr>
<tr><td>17</td><td>VDD</td><td>–</td><td>Supply power to IC (+5V).</td></tr>
<tr><td>18</td><td>PD</td><td>O</td><td>PLL charge pump output.</td></tr>
<tr><td>19</td><td>AIN</td><td>I</td><td rowspan="2">The MOS transistor for PLL active low pass filter.</td></tr>
<tr><td>20</td><td>AOUT</td><td>O</td></tr>
<tr><td>21</td><td>VSS</td><td>–</td><td>Ground.</td></tr>
</table>





DECK–1 P, DECK–2 R / P / E HEAD



< TUNER SECTION >

1. Clock Check
   Settings : • Test point : TP1
   Method : Set to MW 1710kHz and check that the test point is 2160kHz ± 0.045kHz.

2. FM Seperation Check
   Settings : • Test point : TP7,TP8
   • Input Level : 54dB
   Method : Set to FM 98.0MHz and check that the test point is more than 25 dB

3. MW VT Adjustment
   Settings : • Test point : TP2 (VT)
   • Adjustment location : L981
   Method : Set to MW 1710kHz and adjust L981 so that the test point becomes 8.5V ± 0.05V. Then set to MW 530kHz and check that the test point is more than 0.3V.

4. MW Tracking Adjustment
   Settings : • Test point : TP6, TP7
   • Adjustment location :
   L981 ..... 600kHz
   TC941 ..... 1400kHz
   Method : Set up TC941 to center before adjustment. The level at 600 kHz is adjusted to MAX by L981. Then the level at 1400 kHz is adjusted to MAX by TC941.

5. FM VT Check
   Settings : • Test point : TP2 (VT)
   Method : Set to FM 108.0MHz and check that the test point is less than 8.5V.
   Set to FM 87.5MHz and check that the test point is more than 1.5V.

6. FM Tracking Check
   Settings : • Test point : TP6, TP7
   Method : • Set to FM 98.0MHz and check that the test point is 2 ± 6dB.

7. SW VT Adjustment
   Settings : • Test point : TP2 (VT)
   • Adjustment location : L942
   Method : Set to SW 17.9MHz and adjust L942 so that the test point becomes 7.0V ± 0.05V.

8. SW Tracking Adjustment (HR)
   Settings : • Test point : TP6, TP7
   • Adjustment location :
   L941 ..... 5.9MHz
   TC942 ..... 17.9MHz
   Method : Set up TC942 to center before adjustment.
   The level at 5.9MHz is adjust to MAX by L941.
   Then the level at 17.9MHz is adjust to MAX by TC942.

9. DC Balance / Mono Distortion Adjustment
   Settings : • Test point : TP3, TP4
   • Adjustment location : L771
   • Input level : 54dB
   Method : Set to FM 98.0MHz and adjust L771 so that the voltage between TP4 and TP5 becomes 0V ± 0.04V. Next, check that the distortion is less than 1.3%

10. Auto Stop Level Check
    Settings : • Test point : TP5
    • Input level : adjustable
    Method : Set to FM 98.0 MHz and check that the voltage low about 0.1V. After that voltage high about 7.0V out by 2dB down.

11. Auto Stop Level Check
    MW
    Settings : • Input level : adjustable
    Method : Check auto stop at MW 999kHz and the level is 35 ~ 60 dB.

    FM
    Settings : • Input level : adjustable
    Method : Check auto stop at FM 98.0MHz and the level is 25dB ± 10dB.

    SW
    Settings : • Input level : adjustable
    Method : Check auto stop at FM 12MHz and the level is less than 60 dB.

< DECK SECTION >

12. Tape Speed Adjustment
    Settings : • Test tape : TTA–100
    • Test point : TP8, TP9
    • Adjustment location : SFR1
    Method : Play back the test tape and adjust SFR1 so that the frequency counter reads 3000Hz ± 5Hz.

13. Head Azimuth Adjustment
    Settings : • Test tape : TTA–410
    • Test point : TP8, TP9
    • Adjustment location : Head azimuth adjustment screw
    Method : Play back the 10kHz signal of the test tape and adjust screw so that the output becomes maximum.
    Next, perform on each FWD PLAY and REV PLAY mode.

14. PB Frequency Response Check (DECK 1, DECK 2)
    Settings : • Test tape : TTA–410
    • Test point : TP8, TP9
    Method : Play back the 315Hz and 10kHz signals of the test tape and check that the output ratio of the 10kHz signal with respect to that of the 315Hz signal is within 2dB.

15. PB Sensitivity Adjustment (DECK 1, DECK 2)
    Settings : • Test tape : TTA–200
    • Test point : TP8, TP9
    • Adjustment location :
    SFR301 (DECK 1, Lch)
    SFR302 (DECK 1, Rch)
    SFR303 (DECK 2, Lch)
    SFR304 (DECK 2, Rch)
    Method : Play back the test tape and adjust SFRs so that the output level of the test point becomes 330mV.

16. REC/PB Frequency Response Adjustment
    Settings : • Test tape : TTA–602
    • Test point : TP2
    • Input signal : 1kHz / 10kHz (LINE IN)
    • Adjustment location : SFR351 (Lch)
    SFR352 (Rch)
    Method : Apply a 1kHz signal and REC mode.
    Then adjust OSC attenuator so that the output level at the TP2 becomes 210mV. Record and play back the 1kHz and 10kHz signals and adjust SFRs so that the output of the 10kHz signals becomes 0dB ± 0.5dB with respect to that of the 1kHz signal.

17. REC/PB Sensitivity Check
    Settings : • Test tape : TTA–602
    • Test point : TP8, TP9
    • Input signal : 1kHz (LINE IN)
    Method : Apply a 1kHz signal and REC mode. Then adjust OSC attenuator so that the output level at the TP2 becomes 21mV. Record and play back the 1kHz signals and check that the output is 17mV ± 3dB.

18. Bias OSC Frequency Adjustment
    Settings : • Test point : TP10
    • Adjustment location : L351
    Method : Set to the REC mode. Adjust L351 so that the frequency counter of the test point is 85kHz ± 1kHz.

PRACTICAL SERVICE FIGURE

<TUNER SECTION>

<FM SECTION>

IHF Sensitivity :	MONO : 2dB ± 6dB
(THD 3%)	[at 87.5 / 98.0MHz/ 108.0MHz]
S/N 50dB Quieting sensitivity :	
	STEREO :
	30dB ± 6dB
	[at 87.5 / 98.0 / 108.0MHz]
Signal to noise ratio :	MONO :
	More than 65dB
	[at 98.0MHz]
	STEREO :
	More than 64dB
	[at 83.0MHz]
Distortion :	STEREO :
	Less than 2%
	[at 98.0MHz]
	MONO : 1.3%
	[at 98.0MHz]
Stereo separation :	More than 25dB
	[at 98.0MHz]
Intermediate frequency :	10.7MHz

<MW SECTION>

Sensitivity :	55dB ± 5dB
(S/N 20 dB)	[at 603kHz]
	53dB ± 5dB
	[at 999 / 1404kHz]
Distortion :	Less than 1.5%
	[at 999kHz]
Intermediate frequency :	450kHz

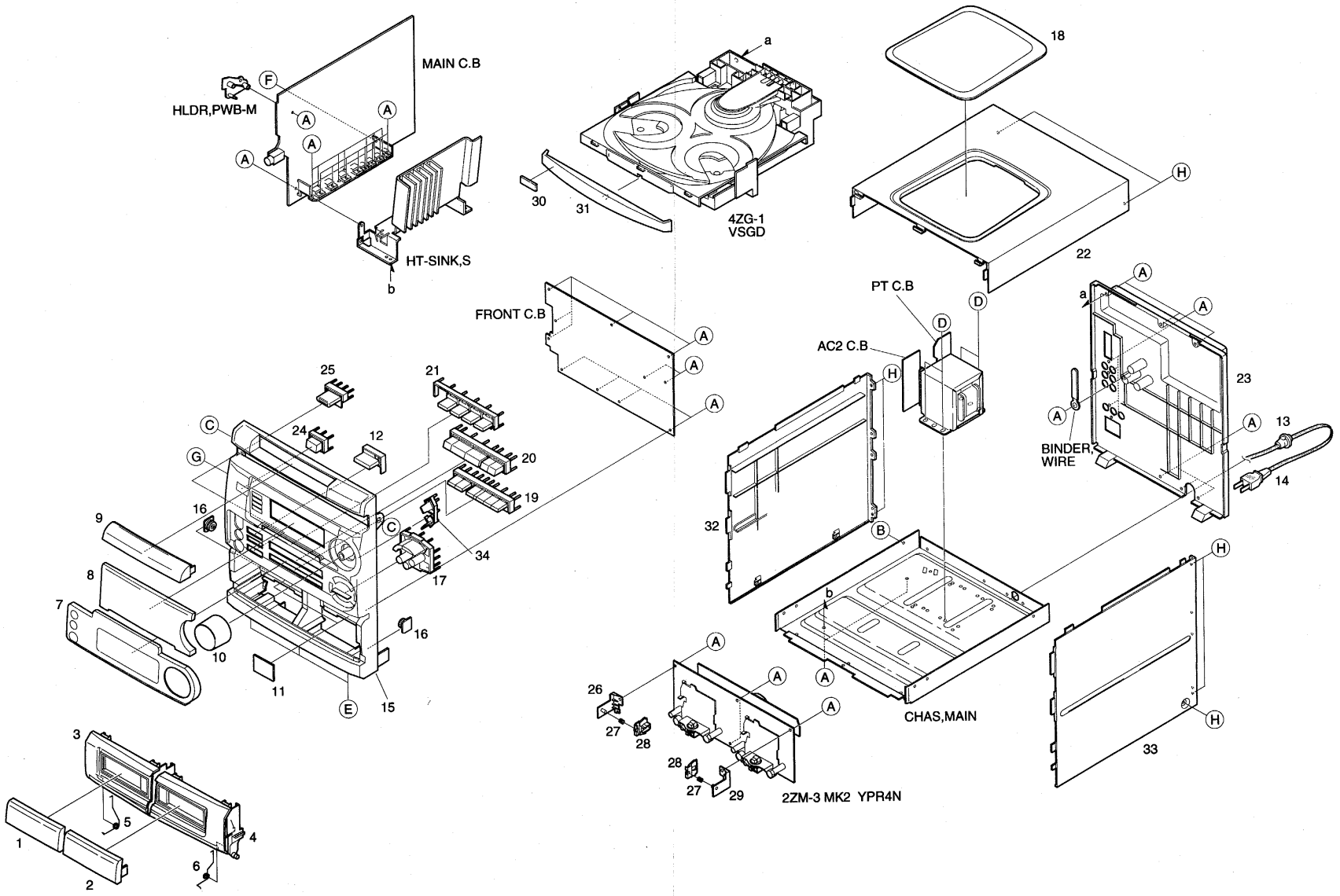
<SW SECTION>

Sensitivity :	38dB ± 5dB (5.9MHz)
(S/N 20dB)	33dB ± 5dB (12.0MHz)
	30dB ± 8dB (17.9MHz)
Distortion :	Less than 1.5% (12.0MHz)
Intermediate frequency :	450kHz

<DECK SECTION>

Tape speed :	3000Hz ± 45Hz
Wow & flutter :	Less than 0.21% (R.M.S)
Take-up torque :	30 ~ 55g-cm (FWD, REV)
F.F & REW torque :	75 ~ 180g-cm (F.F)
	75 ~ 130g-cm (REW)
Back tension :	2 ~ 7g-cm (DECK1,DECK2)
PB Output level :	2.9V ± 3dB
REC/PB Output level :	1.9V ± 3dB
Distortion (REC/PB) :	Less than 2.0% (NORM, CrO2)
Noise level (PB) :	Less than 18mV (NORM, DOLBY OFF/ ON B.C)
Noise level (REC/PB) :	Less than 20mV(NORM, DOLBY OFF/ ON B.C)
Crosstalk :	More than 60dB (1kHz, NORM)
Channel separation :	More than 30dB (1kHz, NORM)
Erasing ratio :	More than 60dB (at 125Hz,CrO2)
Test tape :	NORM : TTA-602
	CrO2 : TTA-615

MECHANICAL EXPLODED VIEW 1 / 1

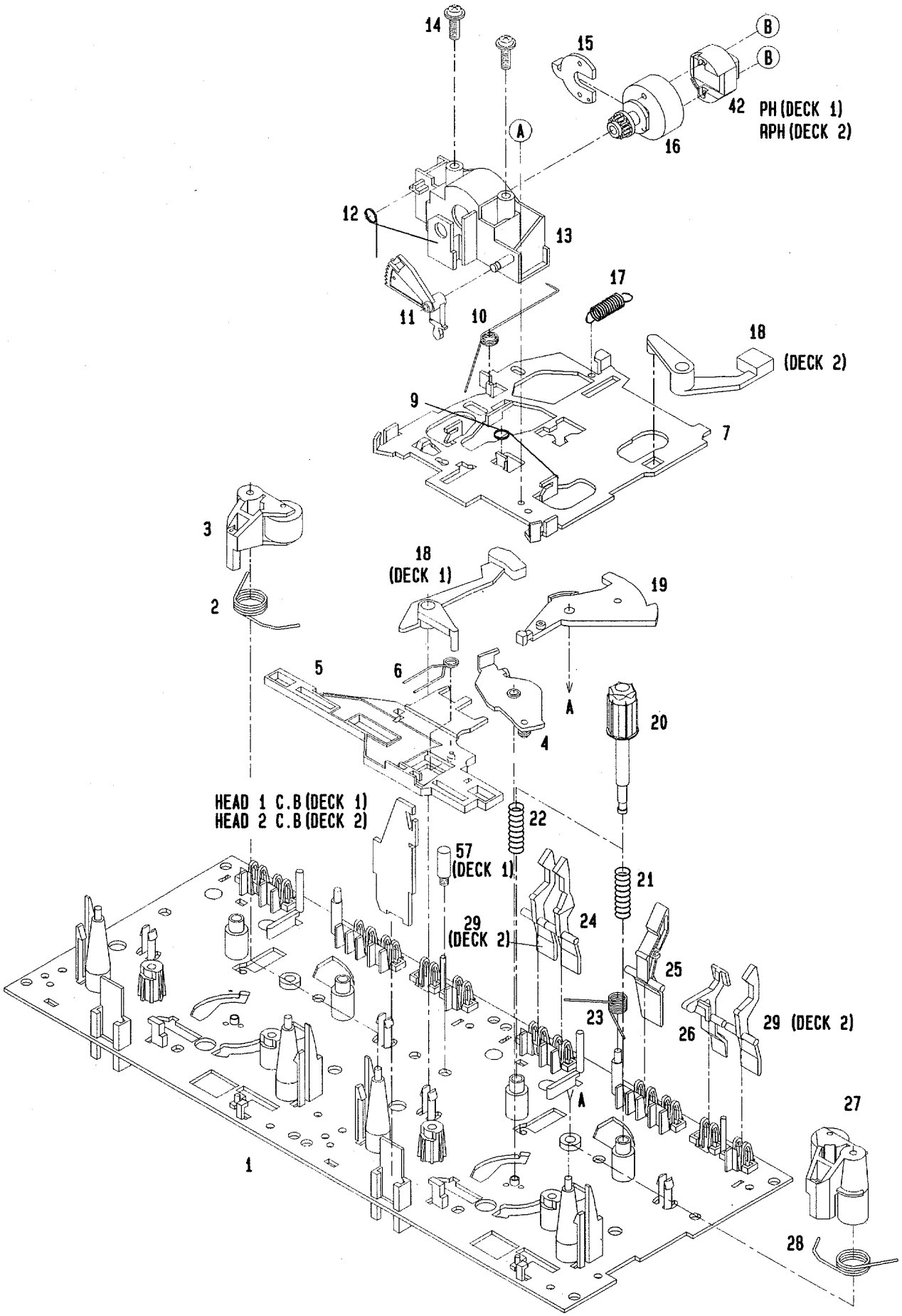


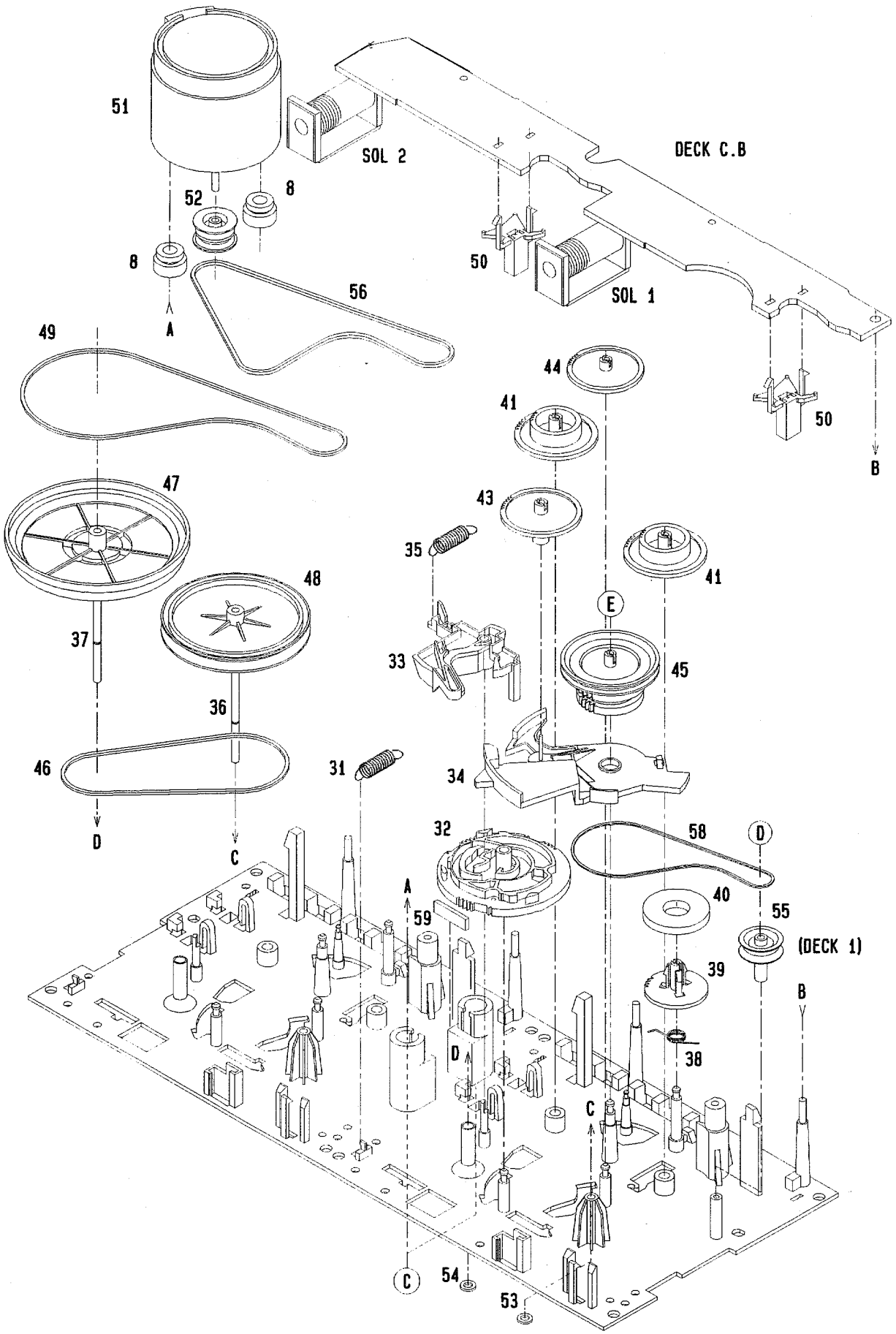
MECHANICAL PARTS LIST 1 / 1

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	87-NF6-041-010		WINDOW,CASS 1
2	87-NF6-042-010		WINDOW,CASS 2
3	87-NF6-011-210		BOX,CASS 1H
4	87-NF6-012-210		BOX,CASS 2H
5	82-NF5-218-010		SPR-T,EJECT 1 (SIN)
6	82-NF5-219-010		SPR-T,EJECT 2 (SIN)
7	87-NH7-006-010		PANEL,FR H
8	87-NH6-007-010		WINDOW,DISPLAY H
9	87-NF6-043-010		WINDOW,CD
10	87-NF6-036-010		KNOB,RTRY VOL
11	81-532-080-010		LABEL, CASS. COMPT
12	87-NH7-011-010		KEY,VCD H
⚠ 13	87-050-079-010		AC-CORD ASSY,E
14	87-085-185-010		BUSHING, AC CORD (E)
15	87-NH7-001-010		CABI,FR H
16	87-063-165-010		OIL-DMPR 150
17	87-NF7-021-010		KEY,CD
18	86-NF6-007-010		WINDOW,TOP
19	87-NF7-082-010		KEY,DSP HIGH
20	87-NF7-029-010		KEY,PLAY REV
21	87-NF7-023-010		KEY,FUNCTION MD
22	87-NF6-021-010		PANEL,TOP
23	87-NH7-024-110		CABI,REAR HCST<HC>
23	87-NH7-023-110		CABI,REAR HRST<HR>
24	87-NF6-025-010		KEY,POWER
25	87-NH6-019-010		KEY,CON
26	87-NF4-216-010		HLDR,LOCK 1
27	82-NF5-228-010		SPR-C,LOCK
28	82-NF5-229-010		PLATE,LOCK
29	87-NF4-217-010		HLDR,LOCK 2
30	82-NE6-067-010		BADGE,AIWA 30N
31	87-NH6-013-010		PANEL,TRAY H
32	87-NF6-022-010		PANEL,LEFT
33	87-NF6-023-110		PANEL,RIGHT
34	87-NF6-028-110		KEY,MIC
A	87-067-703-010		TAPPING SCREW, BVT2+3-10
B	87-721-096-410		QT2+3-10 GLD
C	87-721-097-410		QT2+3-12 GLD
D	87-078-019-010		S-SCREW,IT+4-6
E	87-067-688-010		BVTT+3-6
F	87-NF4-224-010		S-SCREW,IT3B+3-8 CU
G	87-723-096-410		QT2+3-10W/O SLOT BL
H	87-B10-091-010		UTT2+3-10 W/O BLK

TAPE MECHANISM EXPLODED VIEW 1 / 1




51
SOL 2
DECK C.B
52
8
8
50
SOL 1
56
A
49
44
41
50
B
47
43
35
41
48
E
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33
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36
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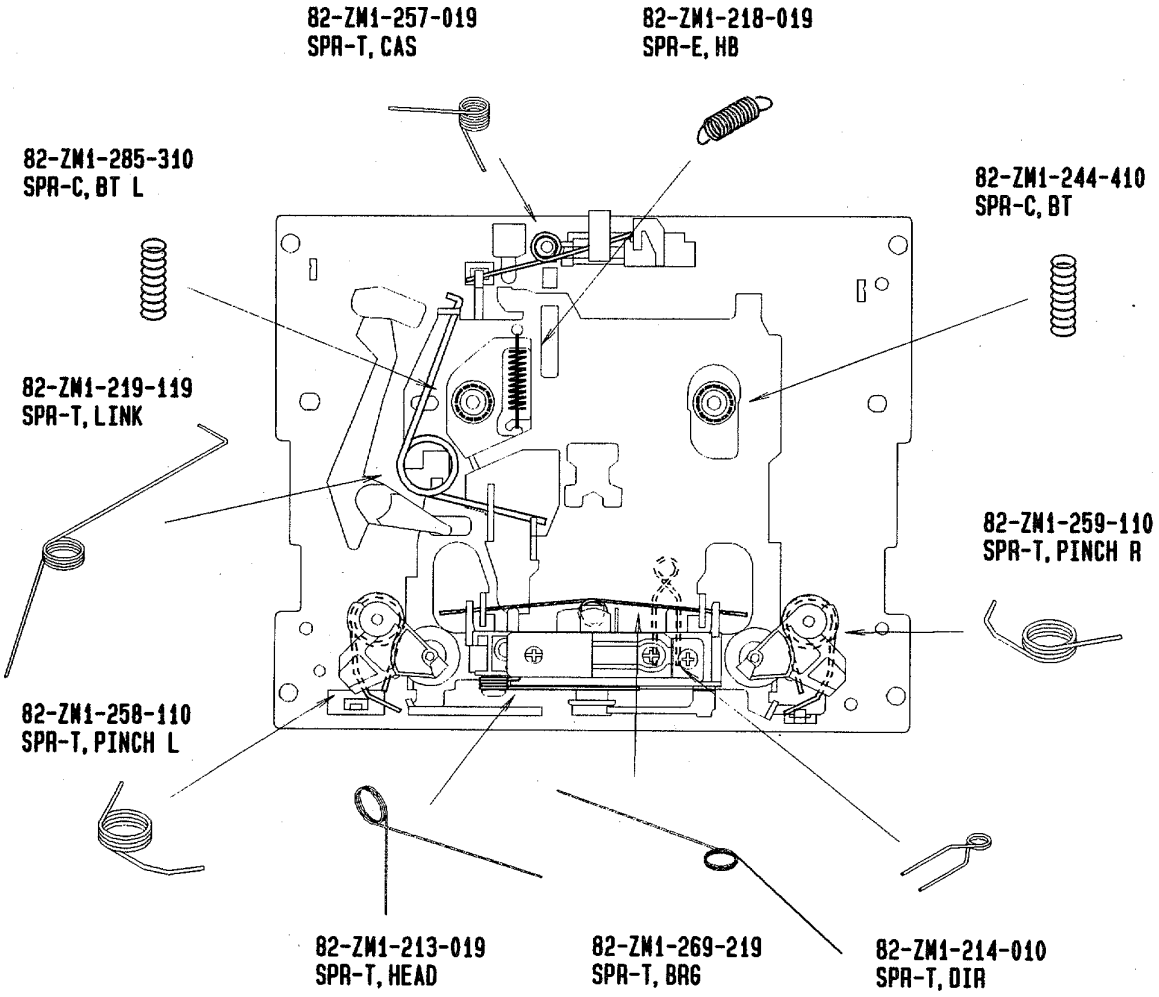
31
34
D
C
32
58
D
A
40
55
59
(DECK 1)
39
B
38
D
C
C
54
53

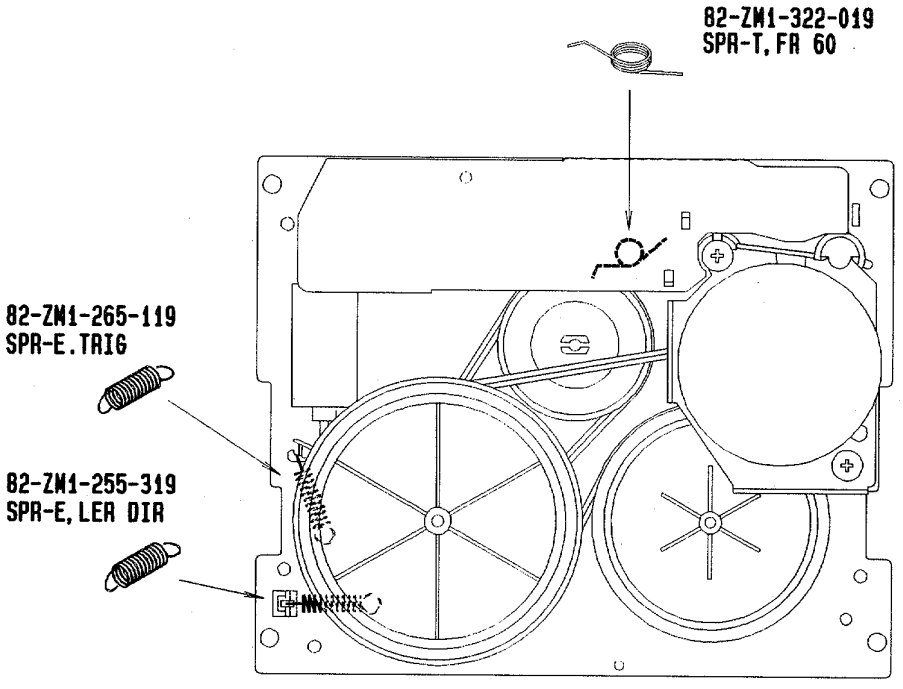
TAPE MECHANISM PARTS LIST 1 / 1

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	82-ZM3-301-519		CHAS ASSY,M2
2	82-ZM1-258-110		SPR-T,PINCH L
3	82-ZM1-341-110		LVR ASSY,PINCH L2
4	82-ZM1-333-010		PLATE,LINK 2
5	82-ZM1-266-11K		LVR,DIR
6	82-ZM1-214-010		SPR-T,DIR
7	82-ZM1-206-81K		CHAS,HEAD
8	82-ZM3-307-019		CUSH-G,DIA3.7-8-3.2
9	82-ZM1-269-219		SPR-T,BRG
10	82-ZM1-219-119		SPR-T,LINK
11	82-ZM1-210-119		GEAR,H T
12	82-ZM1-213-019		SPR-T,HEAD
13	82-ZM1-207-619		GUIDE,TAPE
14	86-ZM4-206-010		S-SCREW,AZIMUTH
15	82-ZM1-314-119		PLATE,HEAD
16	82-ZM1-208-119		HLDR,HEAD
17	82-ZM1-218-019		SPR-E,HB
18	82-ZM1-263-110		LVR,EJECT L (DECK 1)
18	82-ZM1-264-010		LVR,EJECT R (DECK 2)
19	82-ZM1-222-21K		LVR,PLAY
20	82-ZM1-217-319		REEL TABLE
21	82-ZM1-244-510		SPR-C,BT
22	82-ZM1-285-310		SPR-C,BT L
23	82-ZM1-257-019		SPR-T,CAS
24	82-ZM1-241-319		LVR,MC
25	82-ZM1-242-019		LVR,CAS
26	82-ZM1-243-019		LVR,STOP
27	82-ZM1-344-110		LVR ASSY,PINCH R2
28	82-ZM1-259-110		SPR-T,PINCH R
29	82-ZM1-240-11K		LVR,REC (DECK 2)
31	82-ZM1-255-319		SPR-E,LVR DIR
32	82-ZM3-305-01K		GEAR,CAM M2
33	82-ZM1-227-21K		LVR,TRIG
34	82-ZM3-306-11K		LVR,FR M2
35	82-ZM1-265-119		SPR-E,TRIG
36	82-ZM1-236-019		CAPSTAN N 2-41.5
37	82-ZM1-239-019		CAPSTAN N 2.2-41.7
38	82-ZM1-322-019		SPR-T,FR60
39	82-ZM1-220-219		GEAR,IDLER
40	82-ZM3-616-019		RING MAGNET 4
41	82-ZM1-216-31K		GEAR,REEL
42	87-A90-319-010		HEAD,PH HADKH2 FPC
42	87-A90-320-010		HEAD,RPH HADKH5 FPC
43	82-ZM1-225-21K		GEAR,FR
44	82-ZM1-226-019		GEAR,REW
45	82-ZM3-333-310		SLIP DISK ASSY 2
46	82-ZM1-338-010		BELT FR4
47	82-ZM1-349-110		FLY-WHL,R W(DECK 2)
47	82-ZM3-338-110		FLY-WHL,R3 W(DECK 1)
48	82-ZM1-348-010		FLY-WHL,L W(DECK 2)
48	82-ZM1-348-010		FLY-WHL,L W(DECK 1)
49	82-ZM3-329-210		BELT,SBU R2
50	82-ZM1-245-210		HLDR,IC
51	87-045-347-019		MOT,SHU2L 70(M1)
52	82-ZM3-221-010		PULLEY,MOT 2M
53	82-ZM1-288-019		SH,1.63-3.2-0.5 SLT
54	80-ZM6-243-019		SH,1.75-3.6-0.5 SLT
55	82-ZM3-335-210		PULLEY,COUPLER M3(DECK 1)
56	82-ZM3-337-010		BELT,SBU MOT 2
57	82-ZM3-339-010		SHAFT,COUPLER N3(DECK 1)
58	86-ZM1-206-010		BELT,MAIN L
59	82-ZM3-340-010		SH,BELT D2
A	85-ZM3-202-010		S-SCREW,TG
B	80-ZM6-207-019		V+1.6-7
C	82-ZM3-318-019		S-SCRW MOTOR M2
D	87-B10-043-010		W-P,0.99-4-0.25 SLT
E	82-ZM3-334-010		PW,2.16-6-0.4

SPRING APPLICATION POSITION

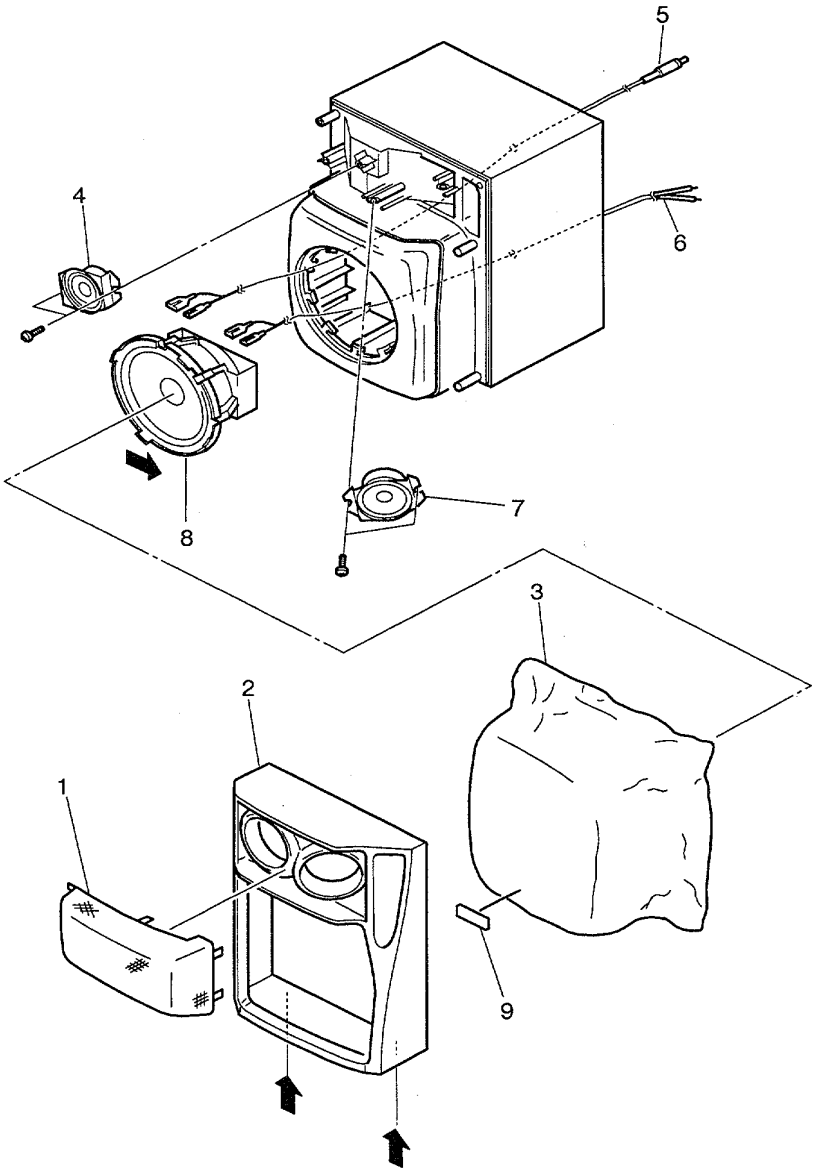




SPEAKER EXPLODED VIEW 1 / 1 (SX-FNS36 -> YJST)

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.

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



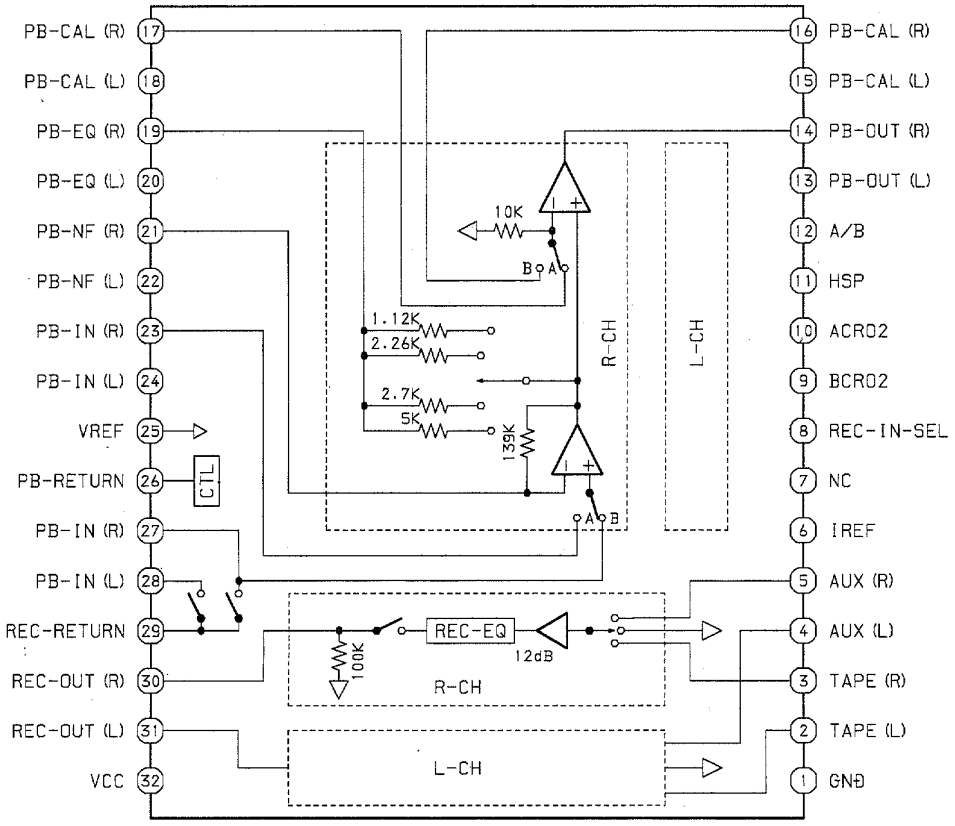
SPEAKER PARTS LIST 1 / 1 (SX-FNS36 -> YJST)

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

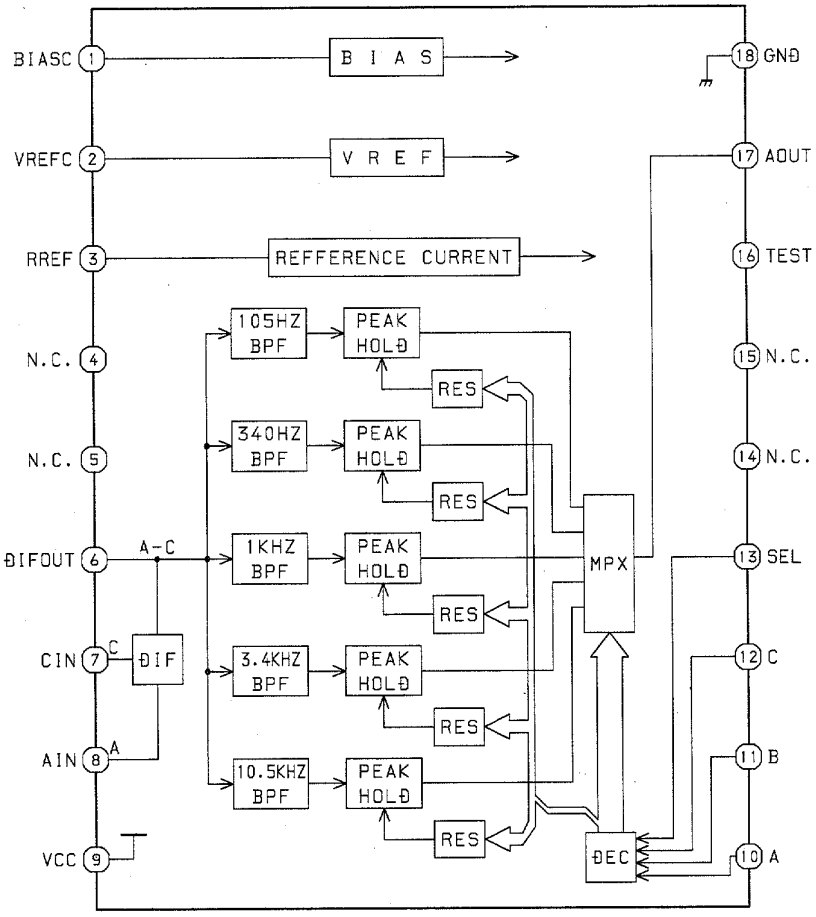
REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	87-NS7-006-010		NET
2	87-NS7-001-010		PANEL,FR R(EXCEPT YLJSKM)
2	87-NS7-002-010		PANEL,FR L(EXCEPT YLJSKM)
2	87-NS7-016-010		PANEL,FR R ASSY(YLJKM)
2	87-NS7-017-010		PANEL,FR L ASSY(YLJKM)
3	87-NS7-005-010		PROTECTOR,TW
4	87-NS7-603-010		SPKR,T 60
5	87-NS4-610-010		SPKR,CODE Y/B(EXCEPT YLJSKM)
5	87-NS7-615-010		SPKR,CORD Y/B(YLJSLM)
6	87-NS6-601-010		SPKR,CORD(EXCEPT YLJSKM)
6	87-NS7-614-010		SPKR,CORD(YLJSKM)
7	87-NS7-606-010		SPKR,SU 60
8	87-NS7-602-010		SPKR,W 140
9	86-NS5-012-010		BADGE,AIWA 35(YLJSKM)
10	87-NS7-022-010		VTS2+3.5-12(YLJSKM)

IC BLOCK DIAGRAM

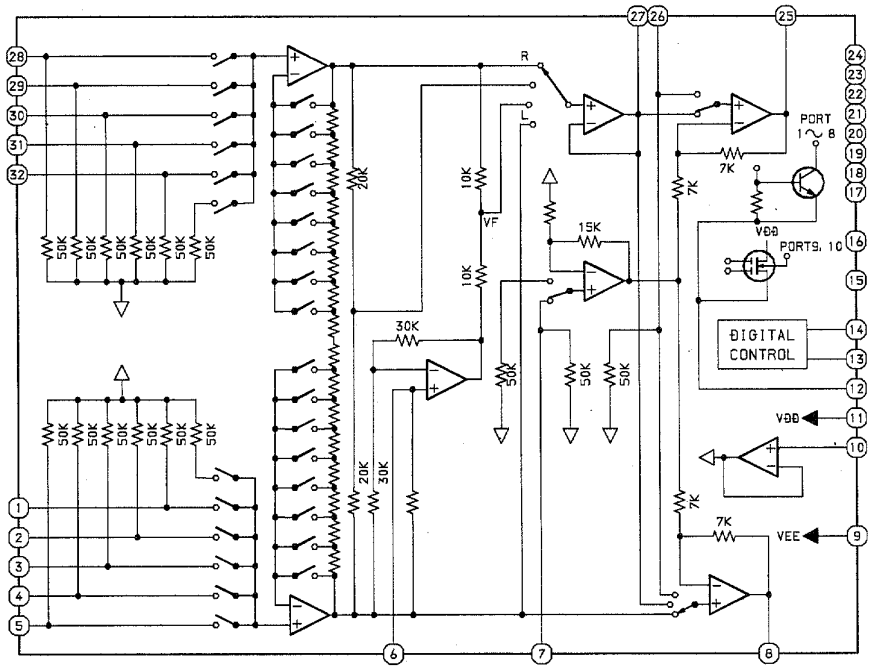
IC, BA7762FS



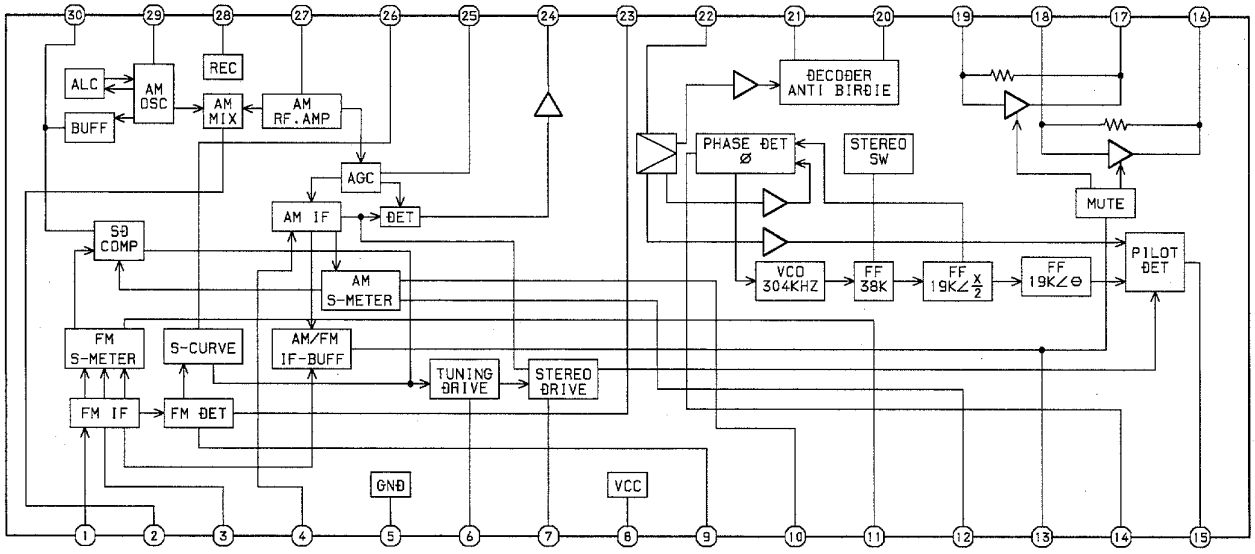
IC, BA3835S



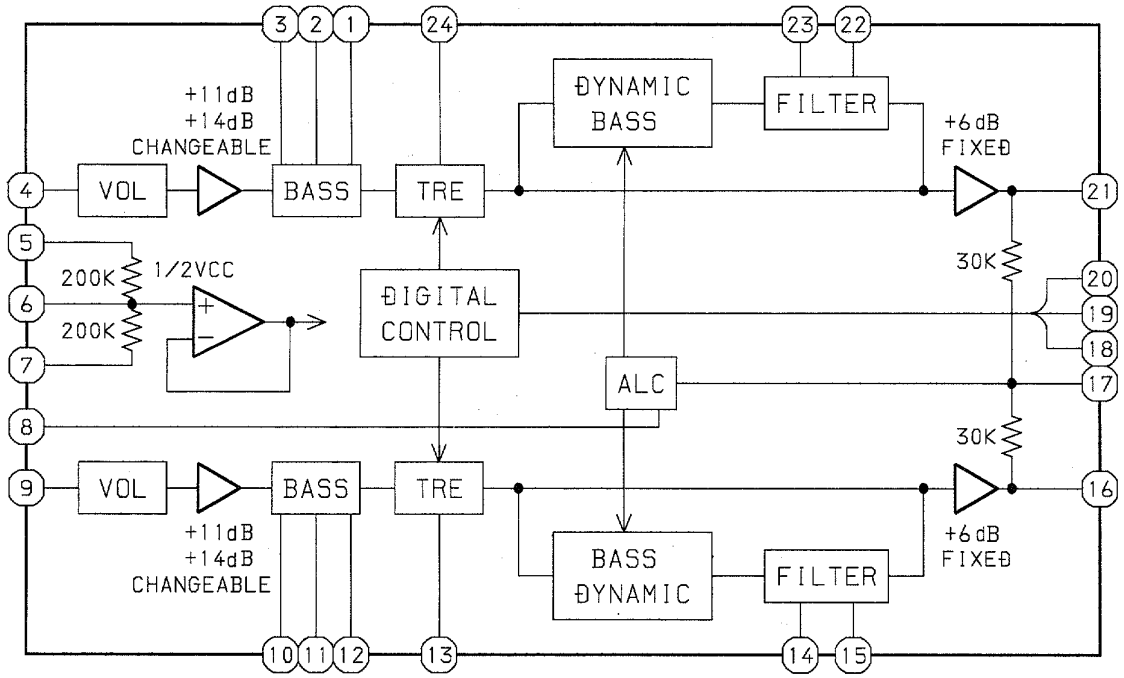
IC, BH3810FS



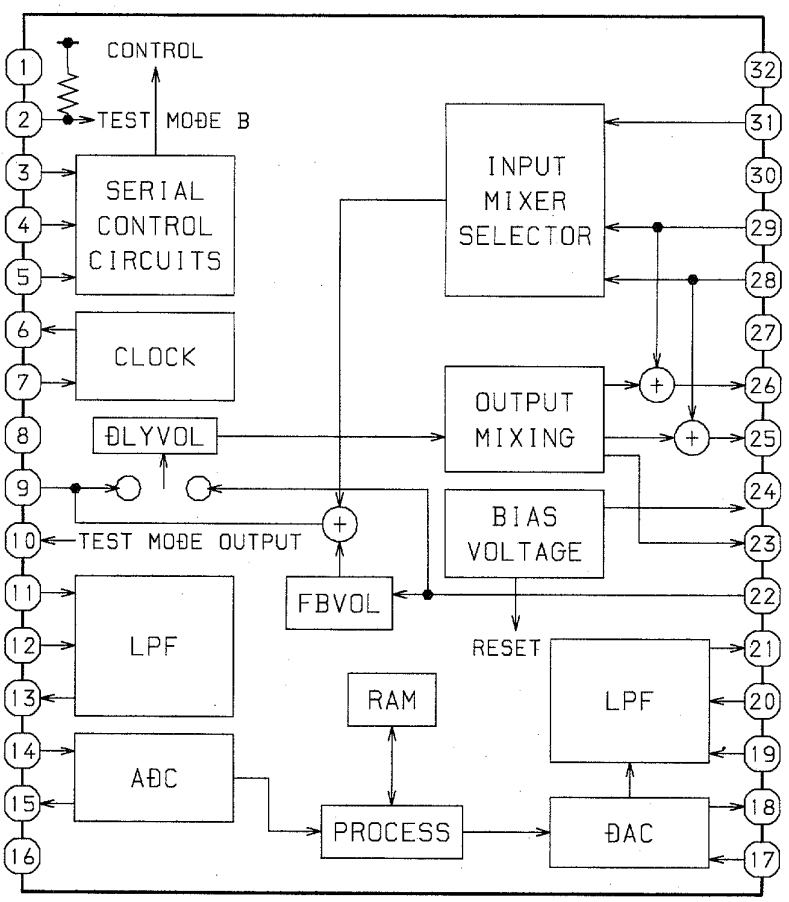
IC, LA1837



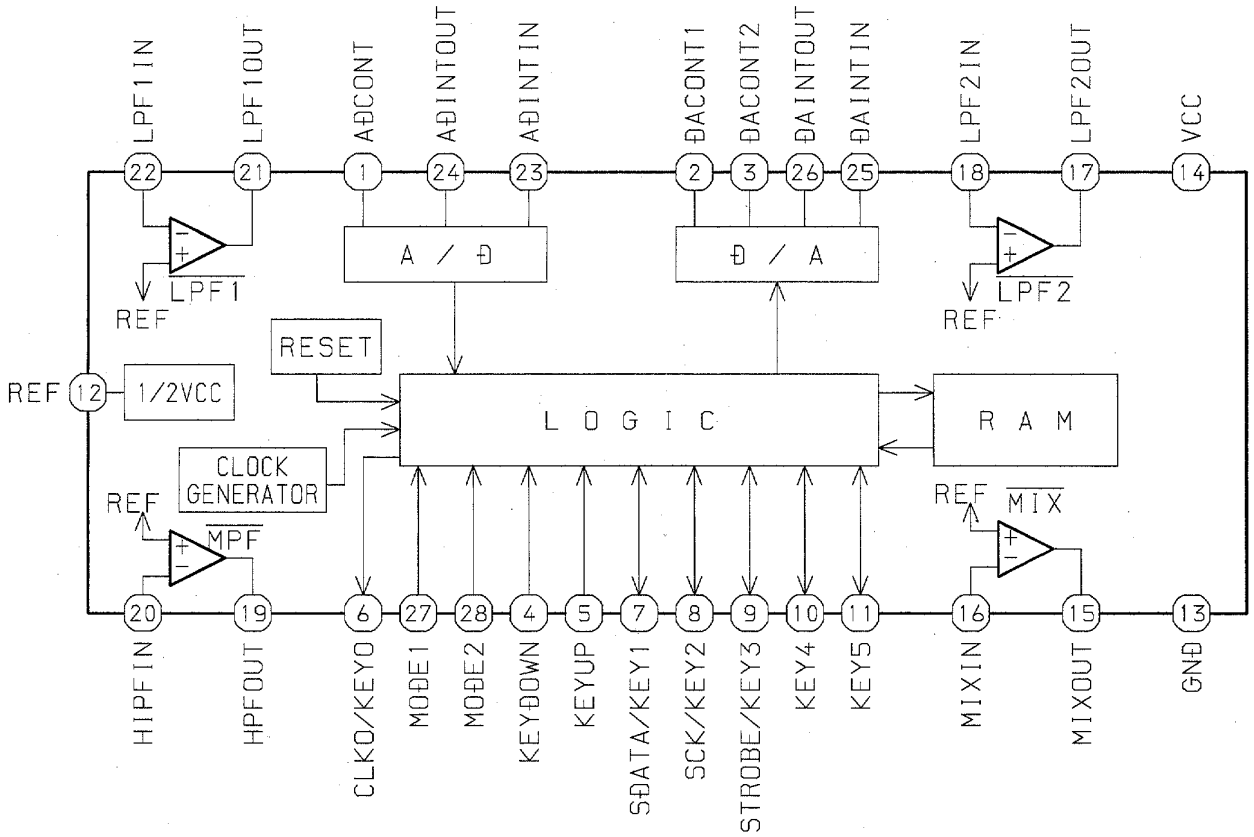
IC, BH3864F



IC, BU9262FS



IC, M65847FP


LPF1IN
LPF1OUT
ADCONT
ADINTOUT
ADINTIN
DACONT1
DACONT2
DAINTOUT
DAINTIN
LPF2IN
LPF2OUT
VCC
22
21
1
24
23
2
3
26
25
18
17
14
A / D
D / A
LPF1
REF
LPF2
REF
RESET
REF
12
1/2VCC
L O G I C
R A M
CLOCK GENERATOR
REF
MPF
REF
MIX
20
19
6
27
28
4
5
7
8
9
10
11
16
15
13
HIPFIN
HPFOUT
CLKO/KEYO
MODE1
MODE2
KEYDOWN
KEYUP
SDATA/KEY1
SCK/KEY2
STROBE/KEY3
KEY4
KEY5
MIXIN
MIXOUT
GND

REFERENCE NAME LIST

ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER

MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL

サービス技術ニュース	
番号	連絡内容
G－　－	
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Printed in Singapore