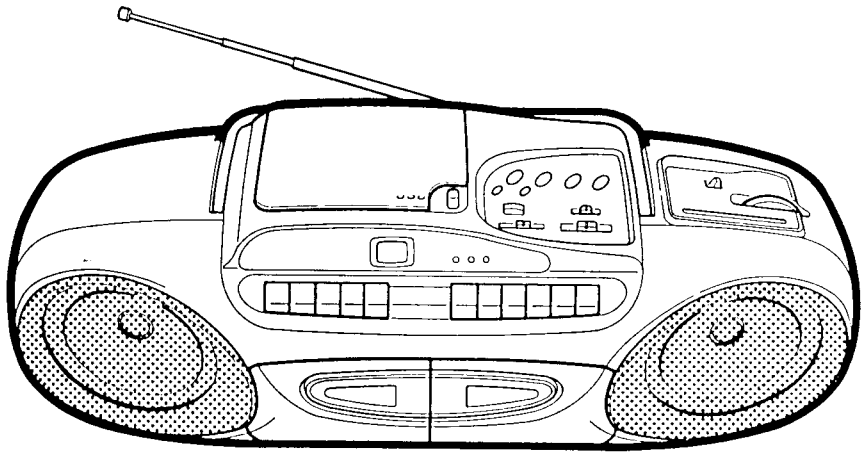
SANYO

FILE NO. D-2575

Service Manual

Portable CD / AM / FM Stereo / Double Cassette

MCD-Z41F (AU)



Specifications

PRODUCT CODE No.
142 917 08

(CASSETTE SECTION)

Recording system	AC bias, 4 track stereo
Erasing system	Magnet erase
Tape speed	4.75 cm / sec.
Fast forward and rewind time	110 sec. (C-60 tape)
Frequency response ..	63 ~ 14,000 Hz (Normal tape)

(CD SECTION)

Channels	2 channels
S / N ratio	70 dB
Wow & Flutter	undetectable
Sampling frequency ...	44.1 kHz
Quantization	16 bits linear / ch
Pick-up light source ...	Semi-conductor laser
Pick-up wave length ...	790 nm

(RADIO SECTION)

Tuning ranges	FM : 88 - 108 MHz AM : 525 - 1,710 kHz
Antennas	Built-in ferrite bar and telescopic rod antennas

(GENERAL)

Output power	4.0 W × 2 (DC max.)
Speaker	12 cm x 2, 4 ohms
Terminal impedance ..	PHONES : 32 ohms
Power source	AC : 230 - 240 V, 50 Hz DC : 12 V (8 × "D " size batteries)
Dimensions	623 (W) x 185.5 (H) x 216 (D) mm
Weight	Approx. 4.0 kg including batteries

Specifications subject to change without notice.

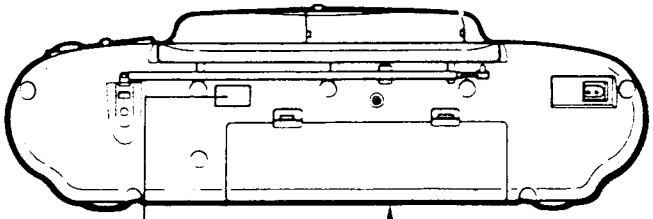
REFERENCE No. SM580198

LASER BEAM SAFETY PRECAUTIONS

- Pick-up that emits a laser beam is used in this CD player.

CAUTION :
USE OF CONTROLS OR ADJUSTMENTS
OR PERFORMANCE OF PROCEDURES
OTHER THAN THOSE SPECIFIED
HEREIN MAY RESULT IN HAZARDOUS
RADIATION EXPOSURE

LASER OUTPUT ..... 0.4 mW Max. (CW)



CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

CAUTION—INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

ADVARSEL—USYNLIG LASER STRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION, UNDGÅ UDS ÆTTELSE FOR STRÅLING.

VARNING—OSYNLIG LASER STRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.

VORSICHT—UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT, DEM STRAHL AUSSETZEN.

VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

REMOVAL AND INSTALLATION

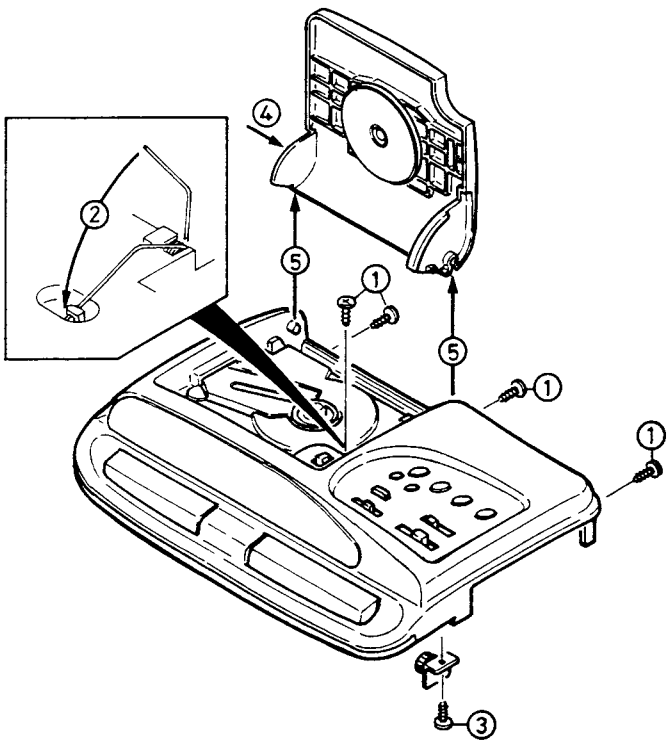
- Disconnect the power cord's plug from the electrical outlet.
- All wiring should be returned to the original position after work is completed.
- First have ready many the new FIXERS (614 129 4971) for replacement.
- Arrange the lead wires so that they are not near the heat sink.

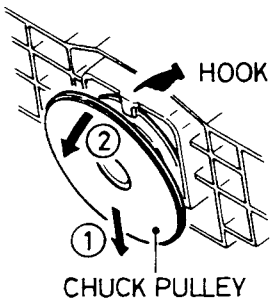
a. CABINET

(1) Remove the battery lid.
(2) Remove the 7 rear cabinet mounting screws. (▸)

b. TOP PANEL

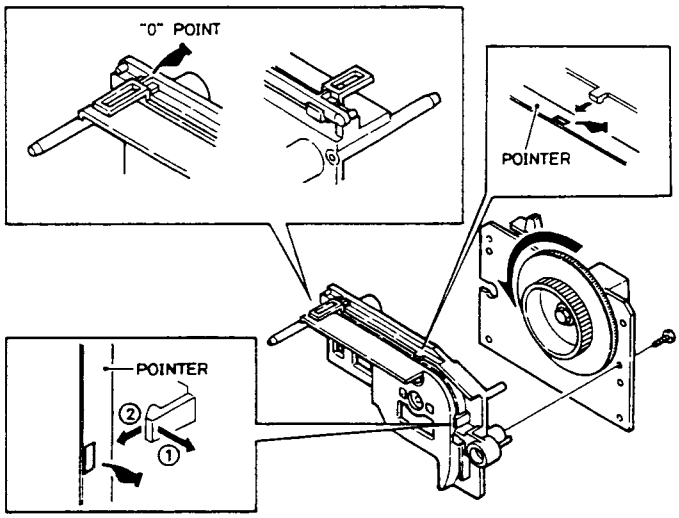
(1) Remove the 4 top panel mounting screws.
(2) Remove the top panel.
(3) Remove the chuck pulley.



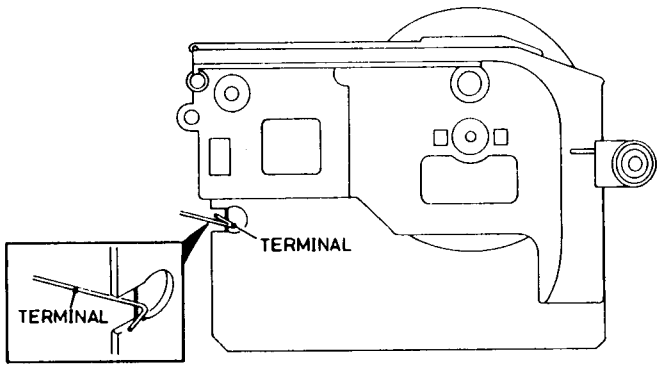


REMOVAL AND INSTALLATION

c. "0" POINT ADJUSTMENT



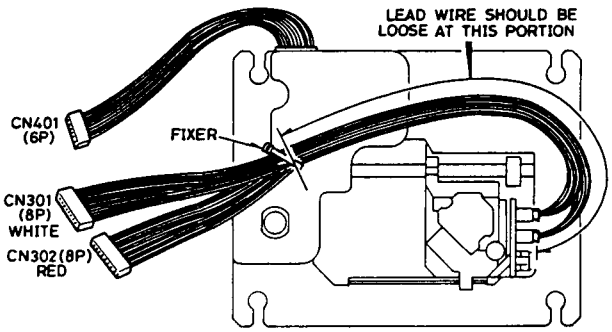
d. ROD ANTENNA TERMINAL



e. WIRING LAYOUT

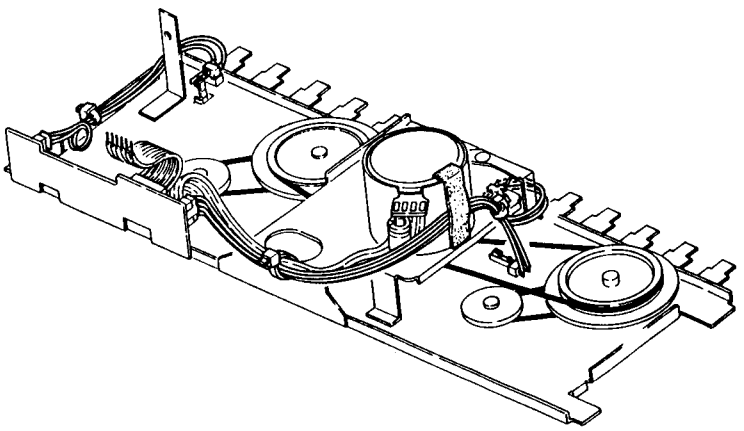
(a) CD MECHANISM

- Arrange the pick-up lead wires as shown illustration.



(b) TAPE MECHANISM

(1) Take up any slack in the leads by securing them with lugs and fixers.
(2) Check that the leads are not touching the pulleys or other parts of the drive section.



TAPE DECK ADJUSTMENTS

a. CHECKING THE MECHANISM TORQUES AND TENSION

- Clean the head, capstan and pinch roller before making any measurement.

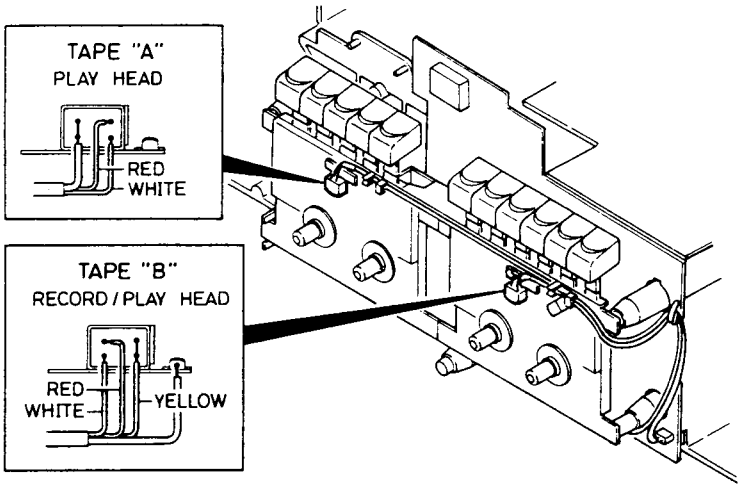
Measurement	Take-up torque	Back tension	Tape tension
Cassette for measurement	PLAY:TW-2111A F.FWD/REW:TW-2231	PLAY:TW-2111A	Drive-power cassette TW-2412
PLAY	30~ 60 gr.cm	1.5~ 4.5 gr.cm	60 gr or more
F.FWD	55~ 120 gr.cm	–	–
REW	55~ 120 gr.cm	–	–

TAPE DECK ADJUSTMENTS

b. HEAD REPLACEMENT AND AZIMUTH ADJUSTMENT

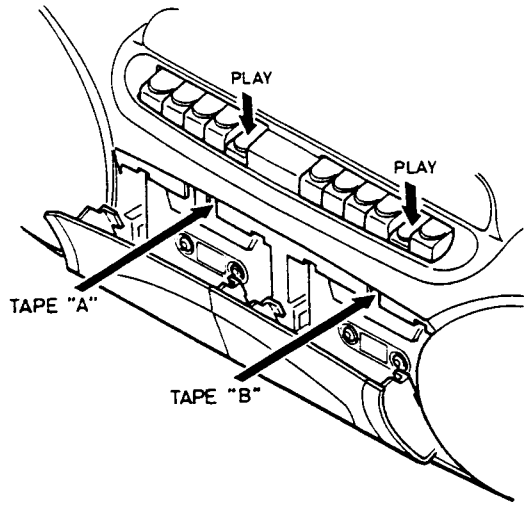
(a) Head replacement

- After replacement, demagnetize the heads by using a degausser.
- Be sure to clean the heads before attempting to make any adjustments.
- Be sure both channels (1 and 2) are the same level (Using a dual-channel oscilloscope).
- All wiring should be returned to the original position after work is completed.

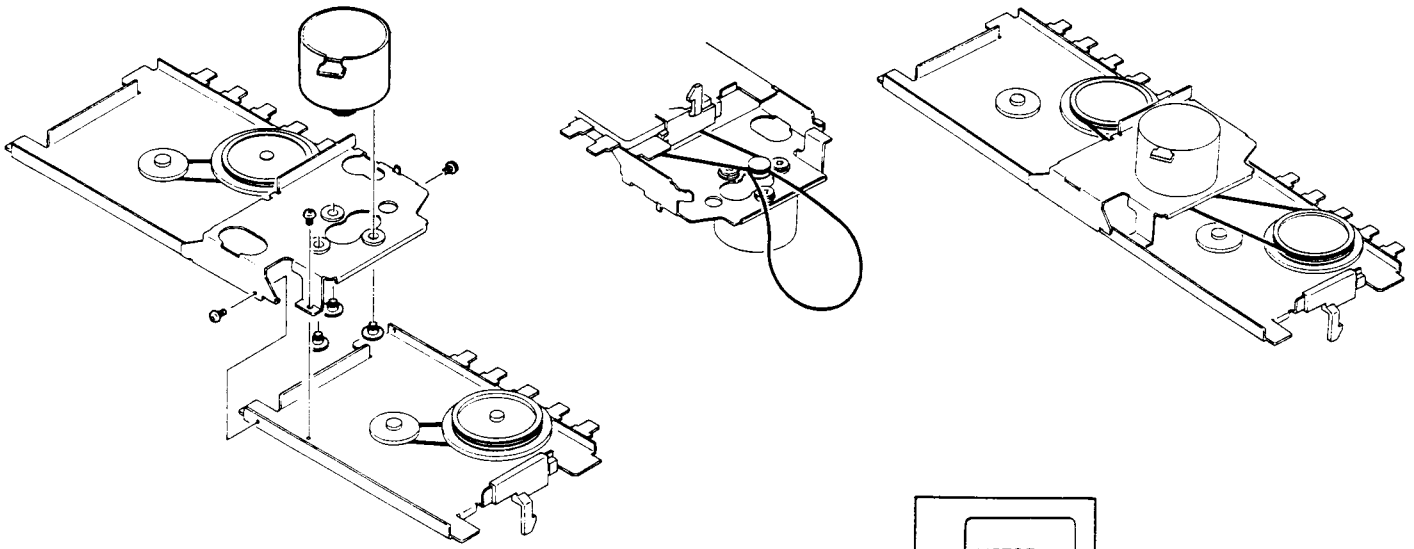


(b) Head azimuth adjustment

(1) Insert the test tape (VTT-703, etc. : 10 kHz) for azimuth adjustment into tape deck A.
(2) Press tape deck A's PLAY button.
(3) Use a cross-tip screwdriver to turn the screw for adjustment of the tape deck A azimuth so that the left and right outputs are maximized while tape deck A is playing back.
(4) Press the tape deck A's STOP button.
(5) Repeat procedure for tape deck B.
(6) After completion of the adjustment, use thread lock (TB-1401B) to secure the azimuth-adjustment screws.

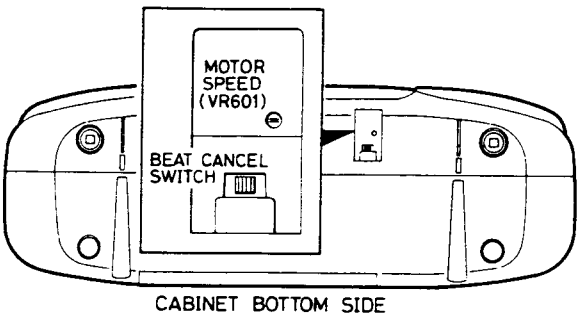


c. MOTOR AND BELT REPLACEMENT



d. MOTOR SPEED ADJUSTMENT

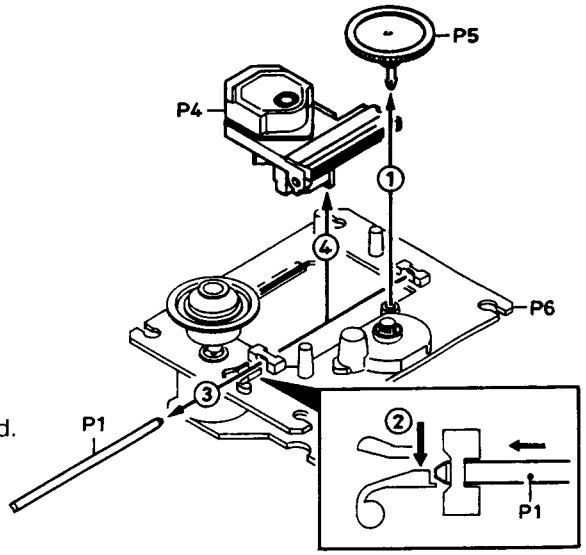
(1) Insert the test tape (MTT-111N, etc., 3000 Hz) into tape deck A.
(2) Press tape deck A's PLAY button.
(3) Adjust VR601 so that the frequency counter shows are reading of 3,000 Hz.

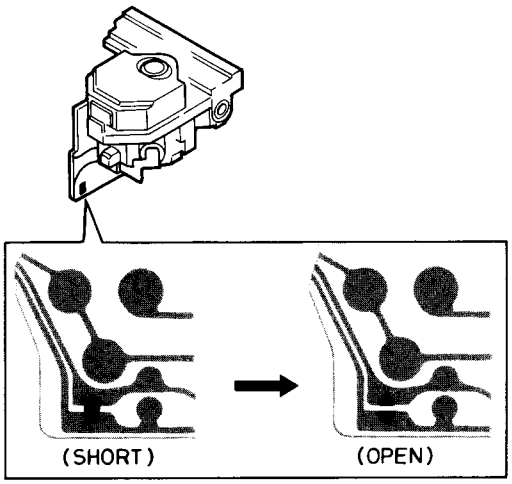


CD PLAYER ADJUSTMENTS

a. REPLACEMENT AND LUBRICATION OF THE PICK-UP

(1) Before replacement of the pick-up, be sure to carefully read the section regarding the pick-up when the unit is moved or transported.
(2) Remove the pick-up rail (P1) with care fixing the latch with any way driver from bottom of chassis (P6).
(3) If the pick-up is reconditioned or replaced, be sure to wipe the rail clean and also apply a coating of FLOIL (G-474B) to their entire circumference and entire length.
(4) After replacement, install the shaft as before.
(5) The pick-up P.C.Board pattern is "**shorted**", as shown in the figure, so that the new pick-up will not be susceptible to the effects of static.
(6) Set the pattern to "**open**" after the pick-up has been replaced.

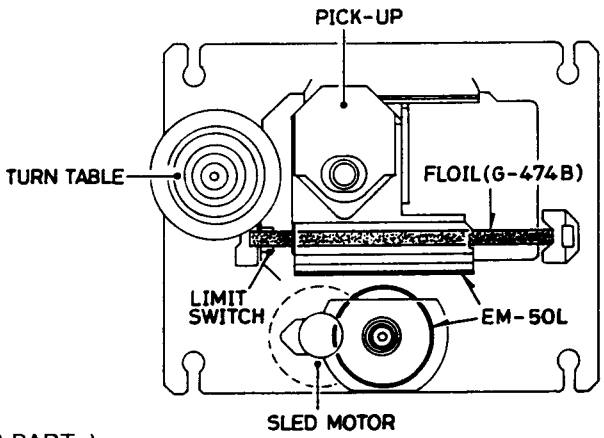




NOTE;
- In order to prevent damage by static electricity during shipment, the indicated patterns on the pick-up P.C.Board are short-circuited by solder.
- After the pick-up replacement, remove the solder that is short-circuiting the patterns.

b. REPLACEMENT AND LUBRICATION OF THE CD MECHANISM

- Be sure, at this time, not to touch any other part.
- NOTE :
  EM-50 .... MOLYKOTE (EM-50L)
  G-474B ..... FLOIL (G-474B)



(BE SURE, AT THIS TIME, NOT TO TOUCH ANY OTHER PART.)
FLOIL (G-474B)

CD PLAYER ADJUSTMENTS

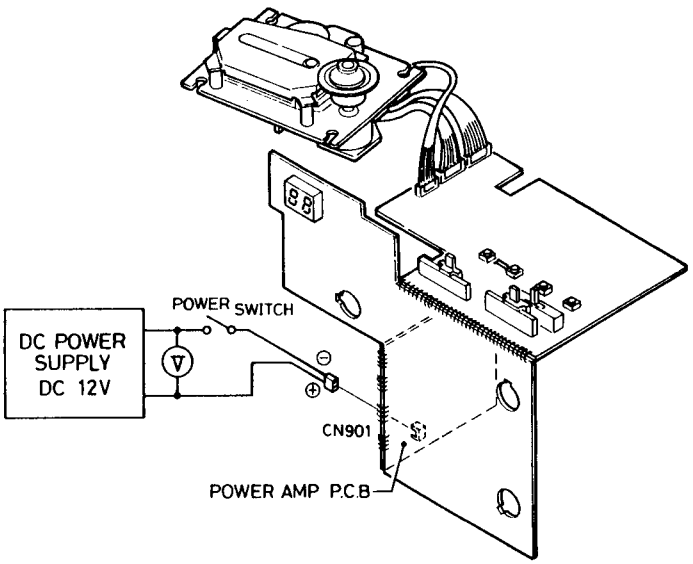
c. PREPARATIONS

(a) Measuring instruments, tools and filter

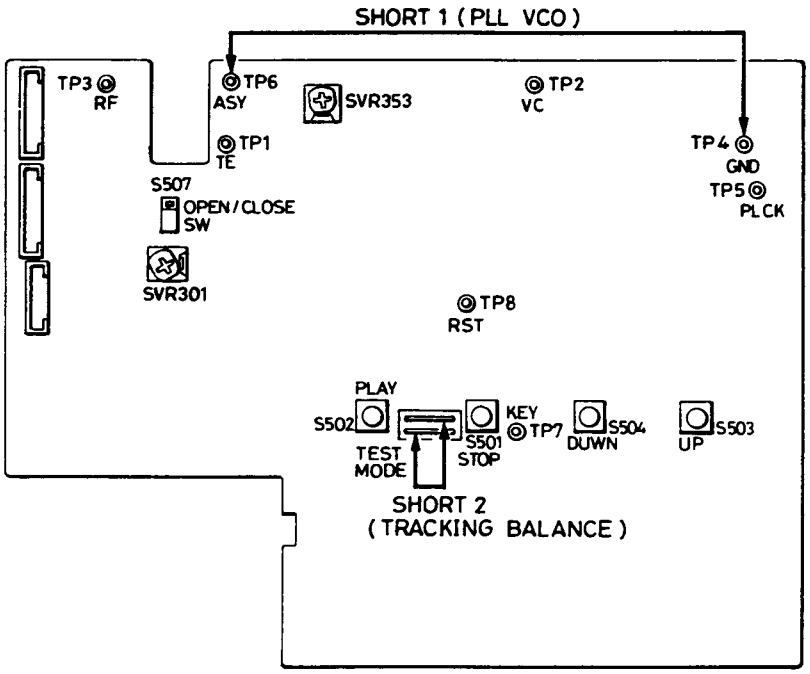
(1) Test disc. : YEDS 18 (SONY) or etc.
(2) Oscilloscope : SS5711
(10 MHz or dual-phenomenon)
or Memoryscope : DSS6521 (Storagescope)
(3) DC digital voltmeter (Input impedance
1M ohm or more)
(4) AC voltmeter (- 80 dB, input impedance
1 M ohm or more)
(5) AF oscillator (400 Hz, 300 mV RMS)
(6) Frequency counter (5 MHz ; or more)
and probe (10 : 1)
(7) Screwdrivers (non-metallic) for adjustments
(8) Low Pass Filter (L.P.F.)
(9) DC Power supply : 12 V, 1 A

(b) Component locations diagram

- Work can be simplified by removing the printed circuit boards from the CD mechanism and placing then as shown in the illustration.
- Place the CD mechanism on a flat and level surface to operate it.



d. PARTS LOCATION



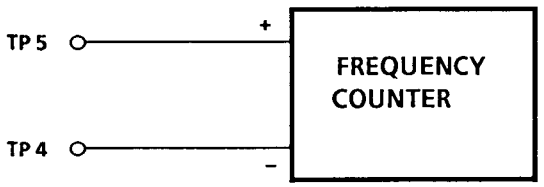
CD PLAYER ADJUSTMENTS

Adjustment Item	Measuring instrument	Short-circuit location	Input connection	Output connection	Adjust-ment location	Adjustment value
(a) PLL VCO free-run	Frequency counter	SHORT 1	—	TP 5 (PLCK) TP 4 (GND)	SVR353	4.300 MHz ± 0.003 MHz
(b) Tracking balance	Oscilloscope L.P.F.	SHORT 2	—	TP 1: TE TP 2 : VC2.5V	SVR301	Waveform symmetry A = B 1.5 Vp-p
(c) Checking the "eye" pattern	Oscilloscope	–	—	TP 3 : RF TP 2 : VC2.5V	—	Check be sure that the "eye" pattern is at the center of the waveform and that the diamond shape is clearly defined

e. ADJUSTMENTS

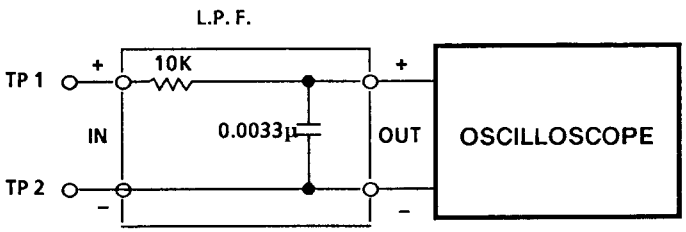
(a) PLL VCO free-run adjustment

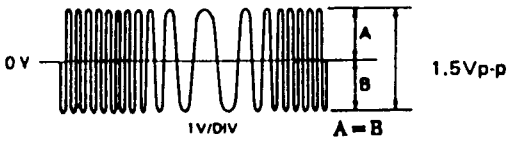
(1) Test disc removed from the unit.
(2) Short-circuit points 1 on the printed-circuit board.
(3) Connect a frequency counter to TP 5 (PLCK) and TP 4 (GND).
(4) Switch ON the DC power (12.0 V)
(See component locations diagram at page 5)
(5) Adjust SVR353 so that the reading of the frequency counter is 4.300 MHz ± 0.003 MHz.
(6) Cancel the short-circuiting of short-circuit point 1 on the printed-circuit board.



(b) Tracking balance adjustment

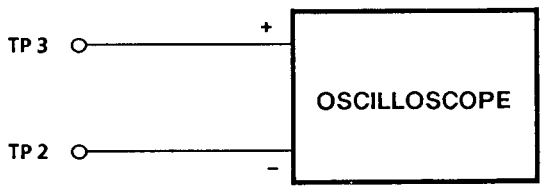
(1) Short-circuit points 2 on the printed-circuit board.
(2) Connect an oscilloscope to TP 1 (TE) and TP 2 (VC 2.5V).
(3) Switch ON the DC power.
(4) Cancel the short-circuiting of short-circuit point 2 on the printed-circuit board.
(5) Set the test disc.
(6) PLAY switch push ON.
(7) Adjust SVR301 so that the oscilloscope's waveform is symmetrical, as shown in the illustration.
(8) Switch OFF the DC power.

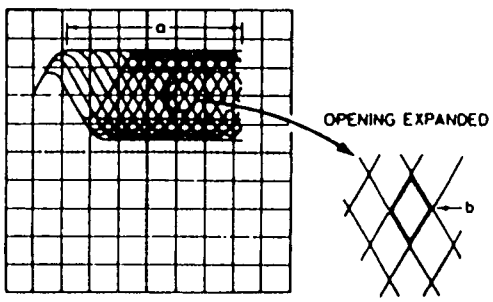




(c) Checking the eye pattern

● The adjustments (a) - (b) complete the adjustments of the CD player.
Next, check the eye pattern waveform.
(1) Switch ON the DC power.
(2) Connect an oscilloscope to TP 3 (RF) and TP 2 (VC 2.5V).
(3) Load the test disc.
(4) PLAY switch push ON.
(5) Check to be sure that the " **eye** " pattern is at the center of waveform and that the diamond shape is clearly defined.
(6) Press the STOP button.
(7) Switch OFF the DC power.



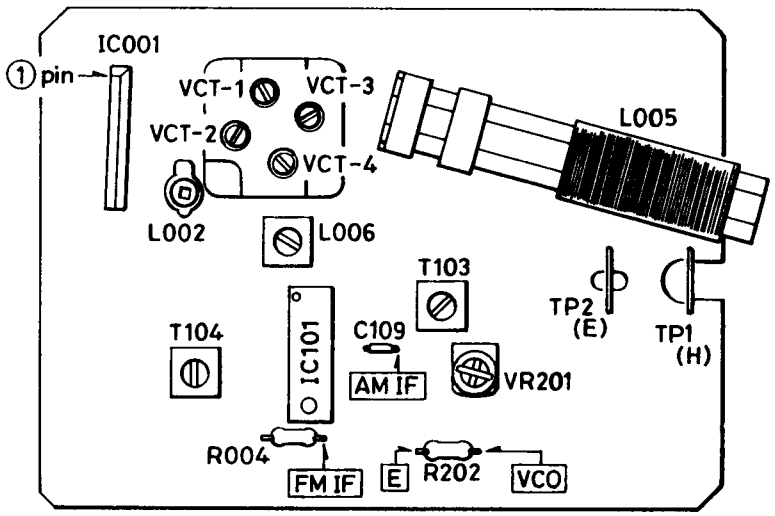


TUNER ADJUSTMENTS

- Use a plastic screw driver for adjustments.
- Adjust the intermediate frequency of AM and FM to the frequency of ceramic filter.

Supply voltage : DC 12.0 V
Phones impedance : 32 ohm
Standard output : 0.5 mW (126 mV)
Function switch : RADIO
TONE controls : HIGH
BASSXPANDER switch : OFF

PARTS LOCATION

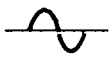


a. AM ADJUSTMENT BAND SELECT SWITCH : AM

Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	IF	Closed the output terminal by sweep generator, it place to L005.	Connect sweep generator to C109(H) & R202(G)	455 kHz	Low	T104	
2	Tuning coverage	Connect AM SG to Test Loop	Connect VTVM to speaker terminals	517 kHz	Low end	L006	Max.
3				1750 kHz	High end	VCT-4	
4	Tracking	Connect AM SG to Test Loop	Connect VTVM to speaker terminals	600 kHz	600 kHz	L005	Max.
5				1400 kHz	1400 kHz	VCT-3	
6	Repeat adjustments						

TUNER ADJUSTMENTS

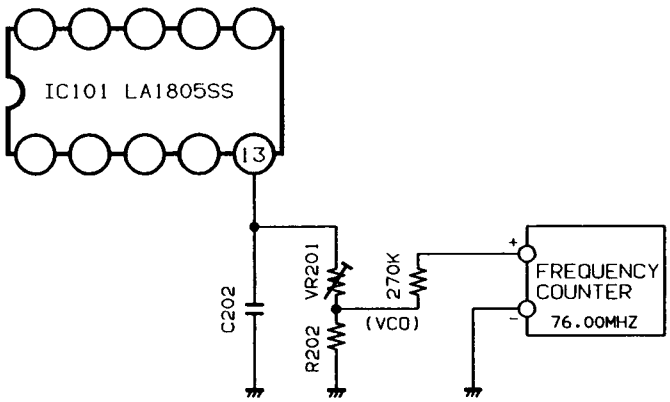
b. FM ADJUSTMENT BAND SELECT SWITCH : FM FM Dummy antenna : 75 ohm unbalance

Step	Adjusting Circuit	Connections		SG Frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	IF	Connect sweep generator to IC001 ① (H) & TP 2 (G)	Connect sweep generator to R004 (H) & R202 (G)	10.7MHz	Low	T103	
2	Tuning coverage	Connect FM SG to TP1 (H) & TP2 (G)	Connect VTVM to speaker terminals	87.0MHz	Low end	L002	Max.
3				109.0MHz	High end	VCT-2	
4	Tracking	Connect FM SG to TP1 (H) & TP2 (G)	Connect VTVM to speaker terminals	106.0MHz	106.0MHz	VCT-1	Max.
5	Repeat adjustments						

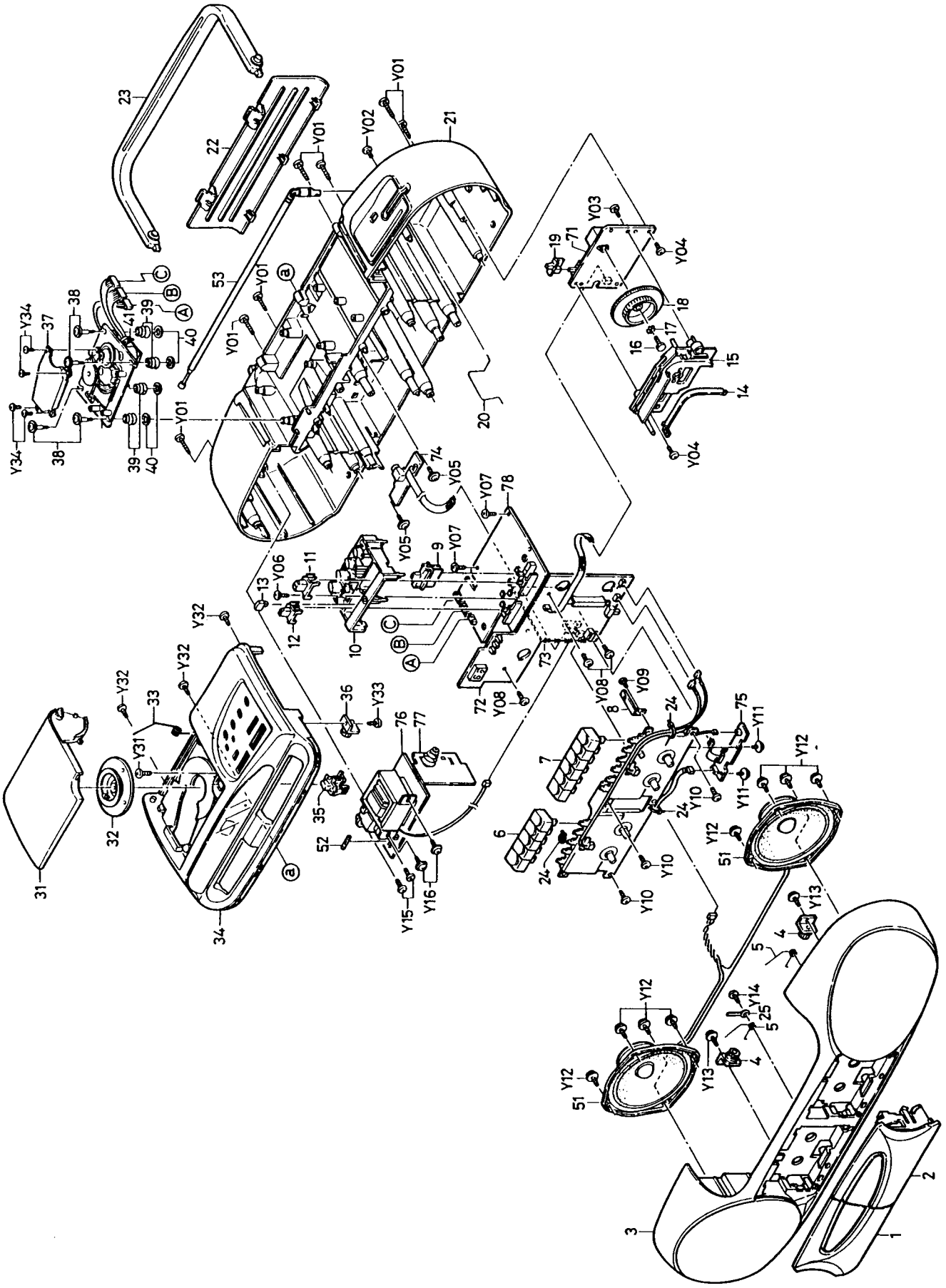
c. FM VCO ADJUSTMENT BAND SELECT SWITCH : FM

(1) Input signal : 60 dB 22.5kHz Non-modulation. at 98.0 MHz
Connection : Hot to TP-1, Ground to TP-2
Pilot signal : OFF
(2) Adjustment : VR201
FREQUENCY : 76.00 kHz ± 0.15 kHz

- FREQUENCY COUNTER SENSIBILITY : HIGH LEVEL (more than 20 mV p-p)
- Adjust VR201 so that the frequency counter shows are reading of 76.00 kHz ± 0.15 kHz.



EXPLODED VIEW (CABINET & CHASSIS)



PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

CAUTION: Regular type resistors and capacitors are not listed. To know those values, refer to the schematic diagram.

PACKING & ACCESSORIES

Ref. No.	Part No.	Description
	614 253 5196	INNER CARTON
	614 247 0244	PAD,TOP
	614 247 0251	PAD,BOTTOM
	614 221 1090	SHEET,SET COVER
	614 253 5219	INSTRUCTION MANUAL
	⚠614 250 6578	POWER CORD,AC
	614 231 6832	LABEL,SAFETY,LASER CLASS

CABINET & CHASSIS

Ref. No.	Part No.	Description
1	614 249 6923	ASSY,LID,CASSETTE,(L), TAPE"A"
2	614 249 6930	ASSY,LID,CASSETTE,(R), TAPE"B"
3	614 249 8187	ASSY,CABINET
4	614 069 0378	GEAR ASSY,CASSETTE DAMPER
5	614 246 8722	SPRING WIRE,CASSETTE LID OPEN
6	614 246 8593	BUTTON,CASSETTE,TAPE"A"
7	614 246 8609	BUTTON,CASSETTE,TAPE"B"
8	614 216 9346	SPRING,PLATE,RECORD/PLAY
9	614 249 3199	KNOB,SLIDE,FUNCTION
10	614 249 3229	BUTTON,CD-OPERATION
11	614 249 3212	KNOB,SLIDE,VOLUME
12	614 249 3205	KNOB,SLIDE,TONE
13	614 249 9450	BUTTON,BASSXPANDER
14	614 237 8564	POINTER,TUNING
15	614 237 3934	MOUNT-M,TUNING
16	411 098 7107	BOLT HEX C-SCT,2.6X12MM, TUNING KNOB
17	411 085 1200	WASHER OUT TW 2.6X5.8X0.3MM,TUNING KNOB
18	614 237 3880	KNOB,ROTARY,TUNING
19	614 238 9447	KNOB,SLIDE,BAND
20	614 246 8678	TERMINAL,ROD ANTENNA
21	614 253 0283	ASSY,CABINET,REAR
22	614 249 8217	LID,BATTERY
23	614 249 8262	HANDLE
24	614 129 4971	FIXER,LEAD MTG.
25	614 129 9136	LUG,LEAD MTG.
31	614 249 3106	LID,CD
32	614 247 2101	ASSY,PULLEY,CD CHUCKING
33	614 246 8715	SPRING WIRE,CD LID OPEN
34	614 249 6947	ASSY,PANEL TOP,CD PANEL
35	614 249 3236	BUTTON,CD LID OPEN/CLOSE
36	614 069 0378	GEAR ASSY,CD LID OPEN/CLOSE
37	614 247 2194	ESCUTCHEON,CD MECHANISM
38	412 046 4407	SPECIAL SCREW,CD MECHANISM
39	614 247 2286	CUSHION,CD DAMPER
40	412 046 8801	SPECIAL WASHER,4X10X1MM, CD MECHANISM
41	614 246 5271	FIXER,CD MECHA LEAD FIX
	614 208 0986	CUSHION,10X40MM,MOTOR MTG.

FIXING PARTS

Ref. No.	Part No.	Description
Y01	411 026 3805	SCR S-TPG PAN,3X20MM, CABINET-BACK
Y02	411 001 9006	SCR BIN 3X8MM,ROD ANTENNA
Y03	411 025 5404	SCR S-TPG BIN 3X12MM, TUNER PCB-MOUNT-M
Y04	411 025 5404	SCR S-TPG BIN 3X12MM, TUNER PCB-BACK
Y05	412 032 6408	SPECIAL SCREW,SOCKET PCB
Y06	411 025 5404	SCR S-TPG BIN 3X12,BUTTON-PCB-BACK
Y07	411 025 5404	SCR S-TPG BIN 3X12MM,CD PCB
Y08	411 025 5404	SCR S-TPG BIN 3X12MM, AMP PCB
Y09	411 025 1901	SCR S-TPG PAN 2X3MM, REC SPRING PLATE
Y10	411 025 5404	SCR S-TPG BIN,3X12MM, MECHANISM
Y11	411 024 3708	SCR S-TPG PAN+FLG,2X6MM, TAPE MECHANISM PCB
Y12	411 156 9500	SCR S-TPG BRZ+FLG,3X10MM, SPEAKER
Y13	411 156 9500	SCR S-TPG BRZ+FLG,3X10MM, GEAR ASSY
Y14	411 025 5404	SCR S-TPG BIN 3X12MM, SPEAKER LEAD MTG.
Y15	411 025 5404	SCR S-TPG BIN 3X12MM, AC POWER SOCKET
Y16	411 156 9500	SCR S-TPG BRZ+FLG,3X10MM, POWER TRANCEFORMER
Y31	411 025 5404	SCR S-TPG BIN 3X12MM, CD DAMPER
Y32	411 155 9204	SCR S-TPG BIN 3X12MM, CD PANEL TOP
Y33	411 155 9204	SCR S-TPG BIN 3X12MM, PANEL-PCB-BACK
Y34	411 022 7500	SCR S-TPG PAN 2X4MM, CD PICK-UP COVER

ELECTRICAL PARTS

Ref. No.	Part No.	Description
51	614 251 7352	SPEAKER,4 OHM
52	⚠423 016 7809	FUSE 250V 2A (FU901)
or	⚠423 005 9500	FUSE 250V 2A (FU901)
53	614 237 5051	ANTENNA,ROD
or	614 240 6564	ANTENNA,ROD
CN311	614 251 4597	ASSY,CONNECTOR-S,8P,WHITE
CN312	614 251 4603	ASSY,CONNECTOR-S,8P,RED
CN411	614 250 0279	ASSY,CONNECTOR-S,6P,CD MECHANISM
CN903	614 231 0991	ASSY,CONNECTOR-S,3P,PLAY HEAD
CN904	614 231 1004	ASSY,CONNECTOR-S,4P,R/P HEAD
CN905	614 246 9637	ASSY,CONNECTOR-S,3P,SPEAKER
CN913	614 234 8314	ASSY,CONNECTOR-S,2P,TAPE"B"
CN914	614 234 8307	ASSY,CONNECTOR-S,4P,TAPE"A"

TUNER P.C.BOARD ASSY

Ref. No.	Part No.	Description
71	614 247 5720	ASSY,PCB,TUNER
	614 221 8273	TERMINAL,TEST POINT
BPF1	614 228 4704	FILTER,LC
C202	403 080 8902	POLYPRO 1500P J 100V
or	403 210 8307	POLYPRO 1500P J 50V
CN1	614 035 5956	SOCKET,4P,AMP.
D001	407 005 4505	DIODE DS442X
or	407 013 1701	DIODE 1S1588
or	407 013 7109	DIODE 1S2473
D201	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
or	407 012 5809	DIODE 1SS176
IC001	409 016 0200	IC LA1186N-AUDIO
IC101	409 163 3802	IC LA1805-SS
L001	614 233 5864	INDUCTOR,AIR
or	614 238 1298	INDUCTOR,AIR
L002	614 035 0012	V.H.F COIL
or	614 229 0217	V.H.F COIL
L003	614 028 6731	FILTER,8.2U
L005	614 230 6888	ASSY,BAR ANTENNA
or	614 254 9964	ASSY,BAR ANTENNA
L006	614 034 1607	O.S.C COIL,AM
or	614 247 9377	O.S.C COIL,AM
S1	614 244 8335	SWITCH,SLIDE,BAND SELECT
T103	614 030 4220	I.F.T.,FM
or	614 247 9391	I.F.T.,FM
T104	614 030 4039	I.F.T.,AM
or	614 247 9384	I.F.T.,AM
VC01	614 239 2416	VC,TUNING CAPACITOR
VR201	614 250 7247	POTENTIOMETER,10K OHM
or	614 250 7414	POTENTIOMETER,10K OHM
or	614 226 3891	POTENTIOMETER,10K OHM
X101	614 030 5630	IF FILTER,FM,RED
or	614 030 5647	IF FILTER,FM,BLUE
or	614 030 5654	IF FILTER,ORANGE
or	614 030 5661	IF FILTER,BLACK
or	614 030 5678	IF FILTER,WHITE
X103	614 030 7580	IF FILTER,AM

PRE-AMP. P.C.BOARD ASSY

Ref. No.	Part No.	Description
72	614 253 5738	ASSY,PCB,PRE-AMP.& CD
C909	403 056 8905	POLYESTER 1000P M 50V
CN903	614 017 2546	PLUG,3P,PLAY HEAD
CN904	614 017 2553	PLUG,4P,RECORD/PLAY HEAD
CN907	614 035 4935	SOCKET,4P,TUNER
CN908	614 035 5970	SOCKET,6P,TAPE MECHANISM
D502	408 017 9007	LED SLZ-183B-05-T1,PLAY
D504	408 017 9007	LED SLZ-183B-05-T1,REPEAT
D505	408 017 9007	LED SLZ-183B-05-T1,MEMORY
D506	407 137 4206	LED SL-1255-05,CD TRACK NO.
D901	407 012 4406	DIODE 1SS133(D901,D902)
or	407 007 9904	DIODE GMA01
D904	407 012 4406	DIODE 1SS133(D904,D906)
or	407 007 9904	DIODE GMA01
IC901	409 251 1000	IC TA8189N
L901	614 034 2048	O.S.C COIL
Q702	405 000 3103	TR DTC114ES(Q702,Q802)
or	405 078 2909	TR BA1A4M
Q703	405 020 7204	TR 2SC945A-K
Q901	405 000 3103	TR DTC114ES
or	405 078 2909	TR BA1A4M
Q902	405 020 7204	TR 2SC945A-K
or	405 012 2002	TR 2SC1815-GR
Q903	405 000 3103	TR DTC114ES(Q903,Q904)
or	405 078 2909	TR BA1A4M
S902	614 233 8506	SWITCH,SLIDE,RECORD/PLAY
S903	614 236 3331	SWITCH,SLIDE,BEAT CANCEL
or	614 235 4506	SWITCH,SLIDE,BEAT CANCEL
	614 217 7273	LUG,LEAD MTG.

POWER AMP. P.C.BOARD ASSY

Ref. No.	Part No.	Description
73	614 253 5745	ASSY,PCB,POWER AMP.
C743	403 058 6008	POLYESTER 0.15U M 50V
C843	403 058 6008	POLYESTER 0.15U M 50V
CN901	614 017 2096	PLUG,2P,POWER SUPPLY
CN905	614 017 2102	PLUG,3P,SPEAKER
CN906	614 035 5963	SOCKET,5P
D908	407 004 9105	DIODE DSF10C
D930	⚠407 053 8708	ZENER DIODE MTZ9.1A
D951	⚠407 053 8500	ZENER DIODE MTZ8.2C
ICP01	⚠614 205 2907	IC PROTECTOR ICP-N20
IC902	⚠409 295 7402	IC TA8229K
Q930	⚠405 023 5306	TR 2SD400-F-MP
or	⚠405 089 2202	TR 2SC4483-T
Q951	⚠405 077 9008	TR TIP29B
Q952	405 000 3103	TR DTC114ES
or	405 078 2909	TR BA1A4M
Q953	405 000 1208	TR DTA124ES
R904	⚠402 061 6005	FUSIBLE RES 22 J- 1/4W
R916	⚠402 041 4601	FUSIBLE RES 10 J- 1/4W
	614 229 8107	HEAT SINK
	411 027 3101	SCR S-TPG BIN,3X8MM, IC902 MTG.

PHONES SOCKET P.C.BOARD ASSY

Ref. No.	Part No.	Description
74	614 253 5752	ASSY,PCB,PHONES SOCKET
CN909	614 217 8904	JACK,PHONES SOCKET
CN910	614 035 4942	SOCKET,5P,AMP.

TAPE MECHANISM P.C.BOARD ASSY

Ref. No.	Part No.	Description
75	614 246 8159	ASSY,PCB,TAPE MECHANISM
CN911	614 020 6562	SOCKET,4P,MOTOR
CN912	614 035 4959	SOCKET,6P,AMP.
CN913	614 017 2539	PLUG,2P,TAPE "B"
CN914	614 017 2553	PLUG,4P,TAPE "A"
D907	407 004 9105	DIODE DSF10C
Q601	405 005 2002	TR 2SA733-P
VR601	614 204 1871	SEMI-FIXED RESISTOR,2K OHM

PARTS LIST

POWER SUPPLY P.C.BOARD ASSY

Ref. No.	Part No.	Description
76	614 252 5876	ASSY,PCB,POWER SUPPLY
CN915	⚠614 020 7590	SOCKET,POWER
CN916	614 246 9644	ASSY,CONNECTOR-2P, CN917 MTG.
CN917	614 020 1215	SOCKET,2P,AMP. PCB
CN918	614 208 4540	FUSE HOLDER
D913	⚠407 088 6403	DIODE GP15D-L
or	⚠407 098 3300	DIODE RL153-BF-S2
D914	⚠407 088 6403	DIODE GP15D-L
or	⚠407 098 3300	DIODE RL153-BF-S2
D915	⚠407 088 6403	DIODE GP15D-L
or	⚠407 098 3300	DIODE RL153-BF-S2
D916	⚠407 088 6403	DIODE GP15D-L
or	⚠407 098 3300	DIODE RL153-BF-S2
T901	⚠614 234 5559	POWER TRANSFORMER

BATTERY TERMINAL P.C.BOARD ASSY

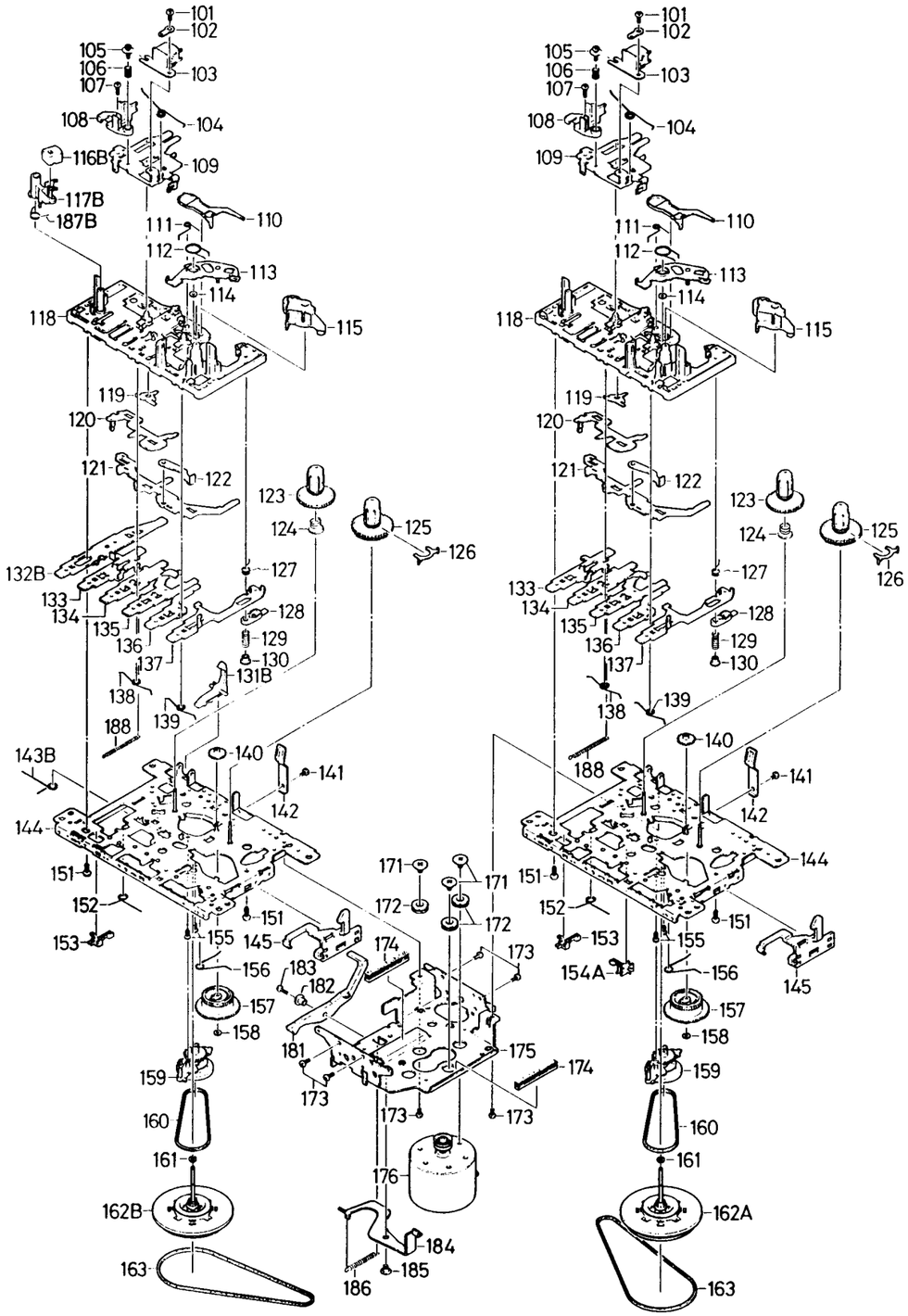
Ref. No.	Part No.	Description
77	614 246 9569	ASSY,PCB,BATTERY TERMINAL
	614 246 8661	TERMINAL (-)

CD & AMP. P.C.BOARD ASSY

Ref. No.	Part No.	Description
78	614 253 5721	ASSY,PCB,CD & AMP.
CN301	614 017 2591	PLUG,8P,WHITE
CN302	614 250 1665	PLUG,8P,RED
CN401	614 017 2577	PLUG,6P,CD MECHANISM
D501	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
ICP02	⚠614 205 2884	IC PROTECTOR ICP-N10
IC301	409 108 5502	IC CXA1081M
IC351	409 185 1602	IC CXA1082BQ
IC401	⚠409 267 8109	IC BA6296FP
IC451	409 227 1102	IC CXD1167Q
IC501	410 164 5207	IC TMP47C440AF-1049
IC981	409 265 6008	IC LC78815MF
L301	614 028 4133	FILTER,CHOKE,10UH
L451	614 028 4133	FILTER,CHOKE,10UH
Q301	405 007 6701	TR 2SB598-F-NP
or	405 006 3909	TR 2SA952-K
or	405 006 4005	TR 2SA952-L
Q401	⚠405 001 9302	TR 2SA1020-Y
or	⚠405 009 5306	TR 2SB927-T
or	⚠405 009 5207	TR 2SB927-S
Q402	405 000 4100	TR DTC124EK
or	405 105 7907	TR FA1F4M
Q505	405 000 4100	TR DTC124EK
or	405 105 7907	TR FA1F4M
Q781	405 014 4509	TR 2SC2412K-R
or	405 011 1006	TR 2SC1623-L6
Q782	405 014 4509	TR 2SC2412K-R
or	405 011 1006	TR 2SC1623-L6
Q803	405 020 7204	TR 2SC945A-K
Q881	405 014 4509	TR 2SC2412K-R
or	405 011 1006	TR 2SC1623-L6
Q882	405 014 4509	TR 2SC2412K-R
or	405 011 1006	TR 2SC1623-L6

Ref. No.	Part No.	Description
R001	401 037 5004	MT-GLACE 0.000 ZA 1/10W (R001-R004,R007, R010-R014,R016-R019, R026,R744,R847)
R020	401 035 4108	MT-GLAZE 0.000 ZA 1/8W (R020-R025)
R027	401 035 4108	MT-GLAZE 0.000 ZA 1/10W (R027-R062,R075-R077, R079,R082,R372,R724, R725,R728,R844,R845, R940,R942-R948)
S501	614 220 5471	SWITCH,TACT,STOP
S502	614 220 5471	SWITCH,TACT,PLAY/PAUSE
S503	614 220 5471	SWITCH,TACT,SKIP/SEARCH,UP
S504	614 220 5471	SWITCH,TACT,SKIP/SEARCH,DOWN
S505	614 220 5471	SWITCH,TACT,REPEAT
S506	614 220 5471	SWITCH,TACT,MEMORY
S507	614 230 8578	SWITCH,PUSH,OPEN/CLOSE
S901	614 230 8561	SWITCH,SLIDE,FUNCTION
S909	614 217 4425	SWITCH,PUSH,BASSXPANDER
TP001	614 221 8273	TERMINAL,TEST POINT (TP001-TP008)
SVR301	614 204 1918	SEMI-FIXED RESISTOR,20K OHM
SVR353	614 204 1871	SEMI-FIXED RESISTOR,2K OHM
VR901	614 230 8554	VR,SLIDE,TONE, 2X50K OHM,"A"
VR902	614 230 8547	VR,SLIDE,VOLUME, 2X10K OHM,"B"
X451	614 215 5554	RESONATOR,CERAMIC,8.46MHZ
or	614 215 5516	RESONATOR,CERAMIC,8.46MHZ

EXPLODED VIEW (TAPE MECHANISM)



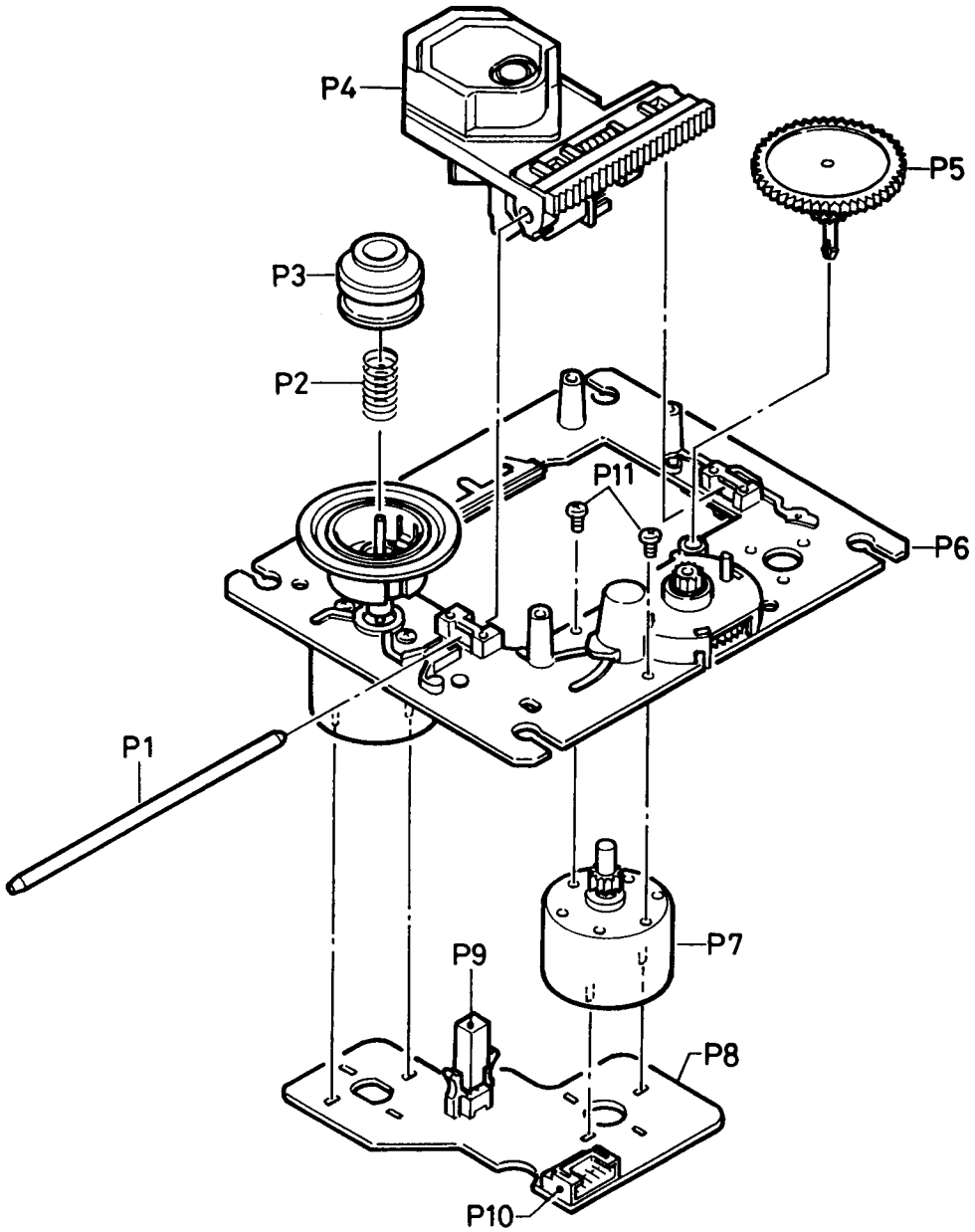
PARTS LIST

TAPE MECHANISM (TM-MCDZ3TN/SP)

Ref. No.	Part No.	Description
101	412 004 3701	SPECIAL SCREW,+BIND SCREW 2X3MM
102	614 208 0276	LUG,RECORD/PLAY HEAD
103	614 249 9931	HEAD,RECORD/PLAY OR PLAY HEAD
104	614 210 3432	SPRING WIRE,PANEL
105	412 026 1709	SPECIAL SCREW,HEAD AZIMUTH SCREW 2X7MM
106	614 151 7162	SPRING COIL,HEAD AZIMUTH
107	412 026 1501	SPECIAL SCREW,SMALL SCREW 2X6MM
108	614 146 5111	BRACKET,TAPE GUIDE
109	614 211 6944	SLIDE,HEAD PANEL
110	614 140 1614	LEVER,SENSING
111	614 152 1299	SPRING WIRE,CONTROLLER
112	614 151 8312	SPRING PLATE,GEAR PLATE
113	614 070 0916	LEVER ASSY,GEAR PLATE RIVET
114	412 026 1808	SPECIAL WASHER,1.45X3.8X0.5 POLYSLIDER
115	614 237 2371	ASSY,PINCH ROLLER
116B	614 021 7605	MAGNETIC HEAD,ERASE
117B	614 140 1515	LEVER,ERASE HEAD,TAPE"B"
118	614 067 3258	SUB CHASSIS ASSY
119	614 129 0676	BOSS,RECORD/PLAY STOPPER
120	614 201 1744	SLIDE,SWITCH ACTUATOR
121	614 139 1120	SLIDE,PUSH BUTTON ACTUATOR
122	614 140 1539	LEVER,EJECT KICK
123	614 204 5695	REEL ASSY,SUPPLY
124	614 208 0351	SPRING,COMP,BACK TENSION
125	614 204 5701	REEL ASSY,TAKE-UP REEL ASSY
126	614 195 5094	LEVER,SENSOR
127	614 152 1244	SPRING WIRE,PAUSE CONTROLLER
128	614 208 0320	LEVER,PAUSE
129	614 151 7186	SPRING COIL,PAUSE LEVER
130	614 129 0669	BOSS,PAUSE STOPPER
131B	614 140 1508	LEVER,UN-RECORDING SENSOR
132B	614 140 1546	LEVER,REC BUTTON
133	614 140 1607	LEVER,PLAY BUTTON
134	614 140 1553	LEVER,REW BUTTON
135	614 140 1560	LEVER,F.FWD BUTTON
136	614 140 1577	LEVER,EJECT/STOP BUTTON
137	614 222 7855	LEVER,PAUSE BUTTON
138	614 152 1251	SPRING WIRE,BUTTON LEVER
139	614 152 1268	SPRING WIRE,BUTTON LEVER
140	614 134 9046	GEAR,F.FWD

Ref. No.	Part No.	Description
141	412 046 6302	SPECIAL SCREW, +C TAPP 2X3MM
142	614 151 8299	SPRING PLATE,CASSETTE HOLDER
143B	614 152 1305	SPRING WIRE,RECORD BUTTON
144	614 067 2770	CHASSIS ASSY
145	614 140 1522	LEVER,EJECT SLIDE
151	412 026 2201	SPECIAL SCREW,P TIGHT BIND 2X5MM
152	614 152 1282	SPRING WIRE,PAUSE LEVER
153	614 024 1693	SWITCH,MOTOR POWER
154A	614 195 4424	SWITCH,PLAY,TAPE"A"
155	412 026 2300	SPECIAL SCREW, CAMERA TAPPING 2X4.5MM
156	614 222 7862	SPRING,WIRE,EJECT ACTUATOR
157	614 134 9053	GEAR,CAM GEAR
158	412 013 5000	SPECIAL WASHER,PW 1.2X3.8X0.3MM
159	614 069 2273	PULLEY ASSY,REW/F.FWD
160	614 195 5087	SQUARE BELT,RF BELT
161	412 012 7005	SPECIAL WASHER,2.1X4X0.25MM, FLYWHEEL THRUST
162A	614 196 0197	FLYWHEEL DISK ASSY,TAPE"A"
162B	614 068 1871	FLYWHEEL DISK ASSY,TAPE"B"
163	614 234 1377	BELT,SQUARE,MAIN BELT
171	412 026 1907	SPECIAL SCREW,MOTOR
172	614 126 6831	CUSHION,MOTOR RUBBER
173	412 026 2003	SPECIAL SCREW,+C TIGHT 2X4MM
174	614 126 6848	CUSHION,ANTI-VIBRATION FELT MAT
175	614 122 9553	BRACKET MOTOR
176	614 250 0309	ASSY,MOTOR
181	614 140 1676	LEVER,PLAY KICK LEVER-B
182	614 129 0683	BOSS,COLLAR-B
183	412 031 7901	SPECIAL SCREW,+CUTAPP M2X6MM
184	614 139 8679	LEVER,PLAY KICK LEVER-A
185	412 005 8101	SPECIAL SCREW,PLAY KICK LEVER COLLAR
186	614 151 4758	SPRING COIL,PLAY KICK LEVER
187B	614 222 7879	SPRING,WIRE,ERASE HEAD ARM
188	614 151 4703	SPRING COIL,PLAY BUTTON LEVER
C933	403 121 2609	ELECT 220U M 16V,MOTOR MTG.

EXPLODED VIEW (CD MECHANISM)

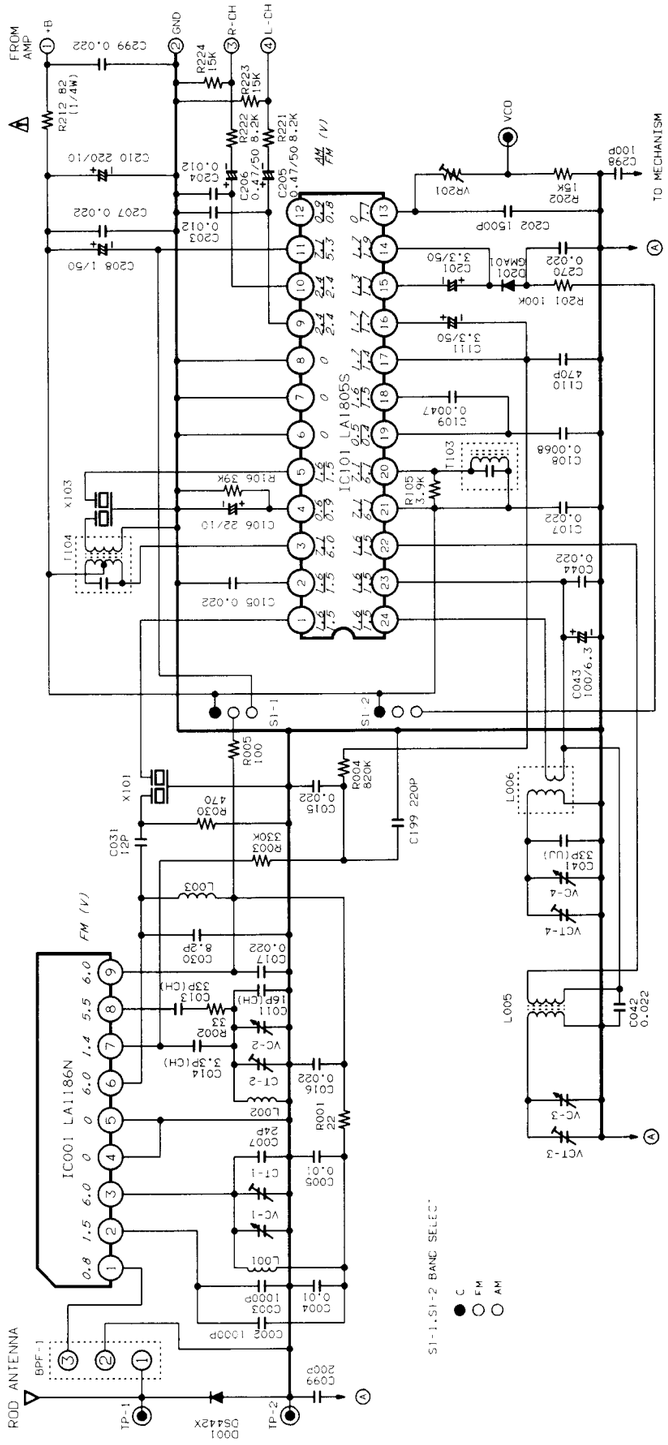


PARTS LIST

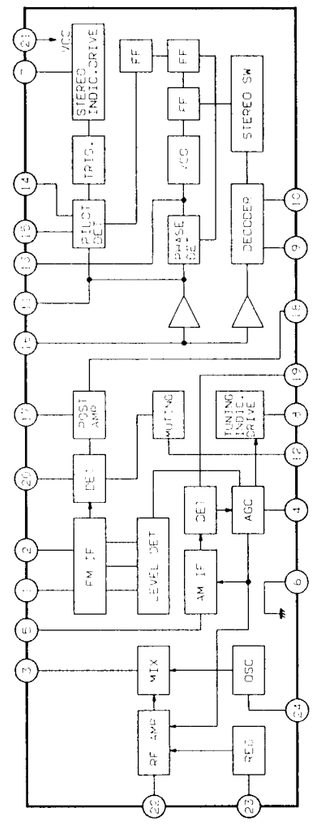
CD MECHANISM (PM-DAD2101SN/SP)

Ref. No.	Part No.	Description
P1	614 250 8626	SHAFT,SLED,PICK-UP
P2	614 250 8619	SPRING,COMPRESSION,CHUCK
P3	614 250 8596	RING,CENTER,CHUCK
P4	614 250 8633	PICK-UP
P5	614 250 8602	GEAR
P6	614 250 8558	CHASSIS A'SSY
P7	614 250 8541	GEAR A'SSY,SLED MOTOR
P8	614 250 8589	P.C.BOARD,MOTOR
P9	614 250 8572	SWITCH,LEAF,LIMIT,S1
P10	614 250 8565	PIN CONNECTOR 6P,CN401
P11	614 250 8831	SCREW,+P2X3MM

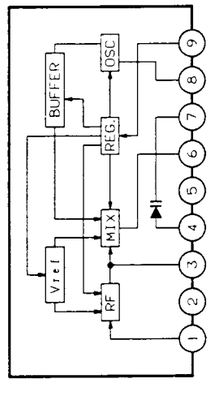
SCHEMATIC DIAGRAM (TUNER)



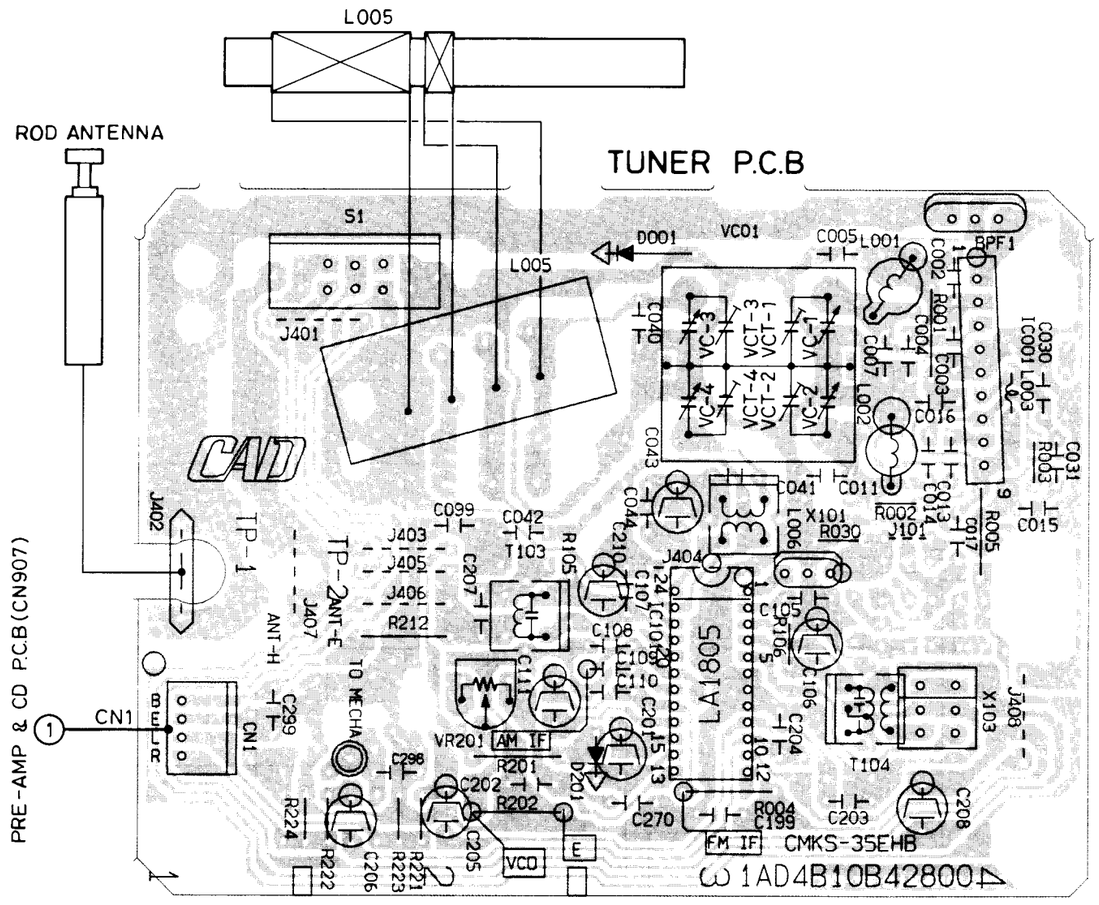
IC101 LA1805N (AM/FM IF DETECTOR)



IC001 LA1186N (FM FRONT END)

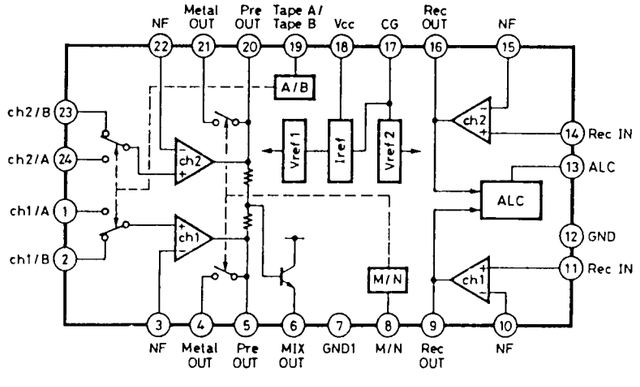


WIRING DIAGRAM (TUNER)

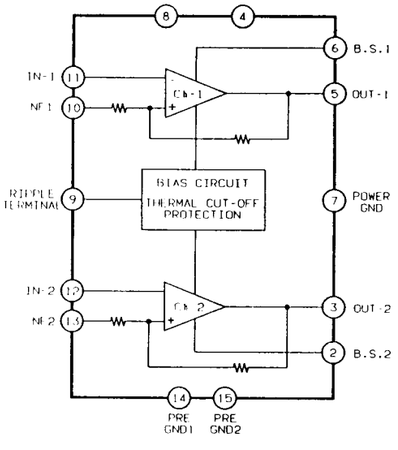


IC BLOCK DIAGRAM

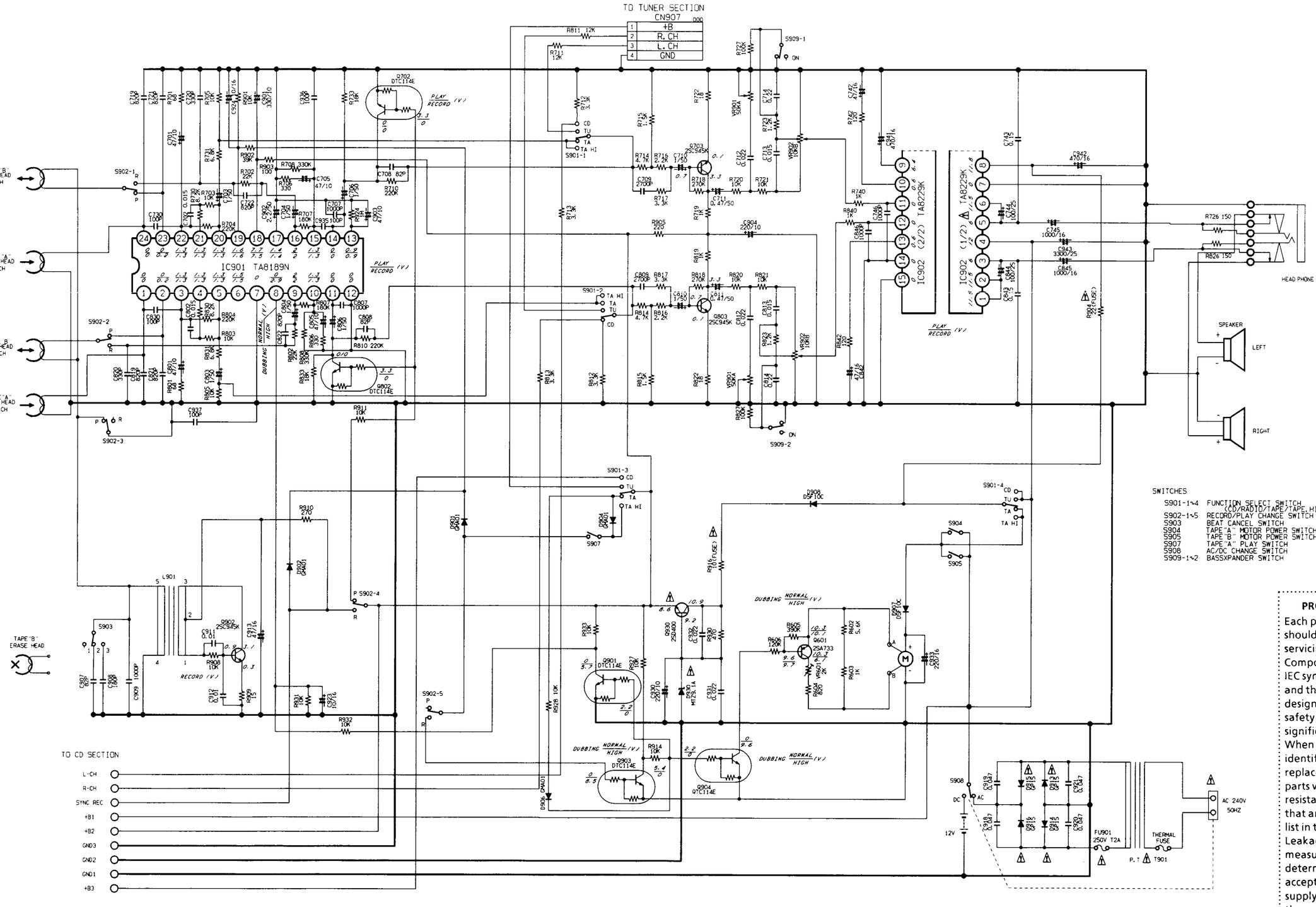
IC901 TA8189N (PRE AMP.)



IC902 TA8229K (POWER AMP.)



SCHEMATIC DIAGRAM (AMP.)

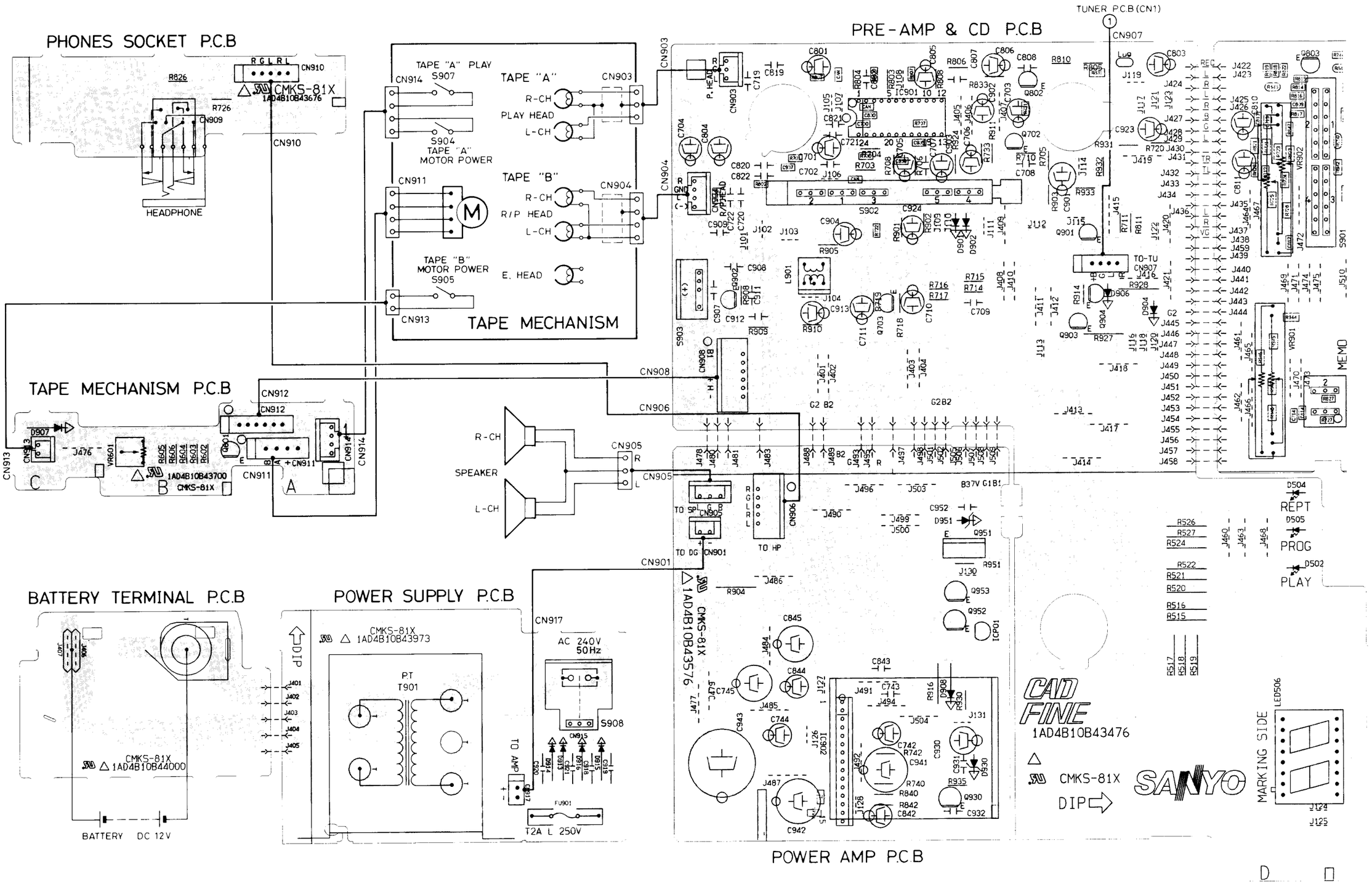


SWITCHES

S901-1~4	FUNCTION SELECT SWITCH (CD/RADIO/TAPE/TAPE, HI)
S902-1~5	RECORD/PLAY CHANGE SWITCH
S903	BEAT CANCEL SWITCH
S904	TAPE "A" MOTOR POWER SWITCH
S905	TAPE "B" MOTOR POWER SWITCH
S907	TAPE "A" PLAY SWITCH
S908	AC/DC CHANGE SWITCH
S909-1~2	BASSXPANDER SWITCH

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing.
Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance.
When replacing a component identified ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.


PHONES SOCKET P.C.B
R G L R L
CN910
CMKS-81X
1AD4B10B43676
R826
R726
CN909
CN910
HEADPHONE
TAPE "A" PLAY
S907
CN914
S904
TAPE "A"
MOTOR POWER
TAPE "A"
CN903
R-CH
PLAY HEAD
L-CH
CN911
M
TAPE "B"
CN904
R-CH
R/P HEAD
L-CH
TAPE "B"
MOTOR POWER
S905
E. HEAD
CN913
TAPE MECHANISM
TAPE MECHANISM P.C.B
CN912
CN912
D907
CN913
J476
VR601
R605
R606
R604
R603
R602
CN901
CN911
CN914
CN914
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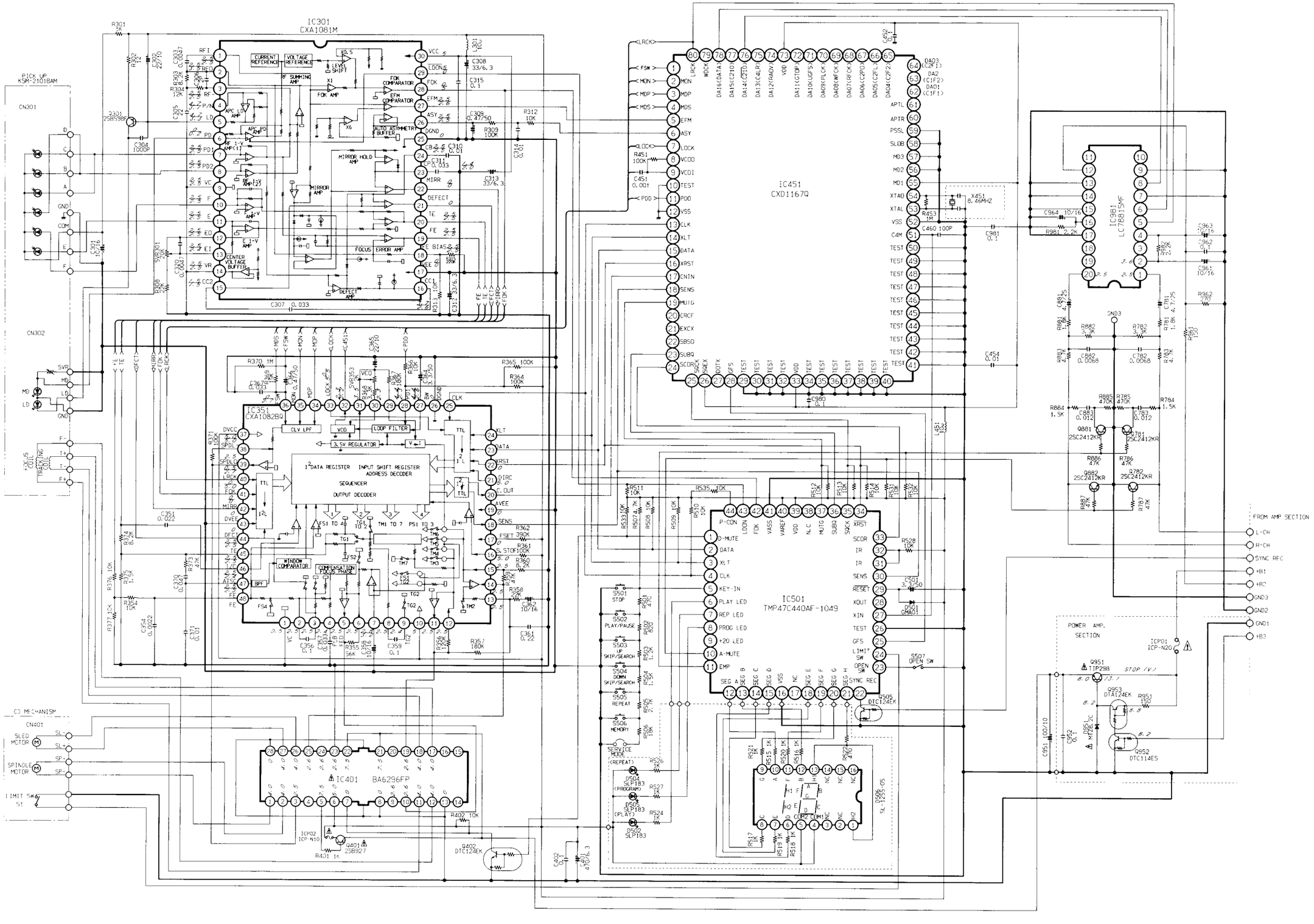
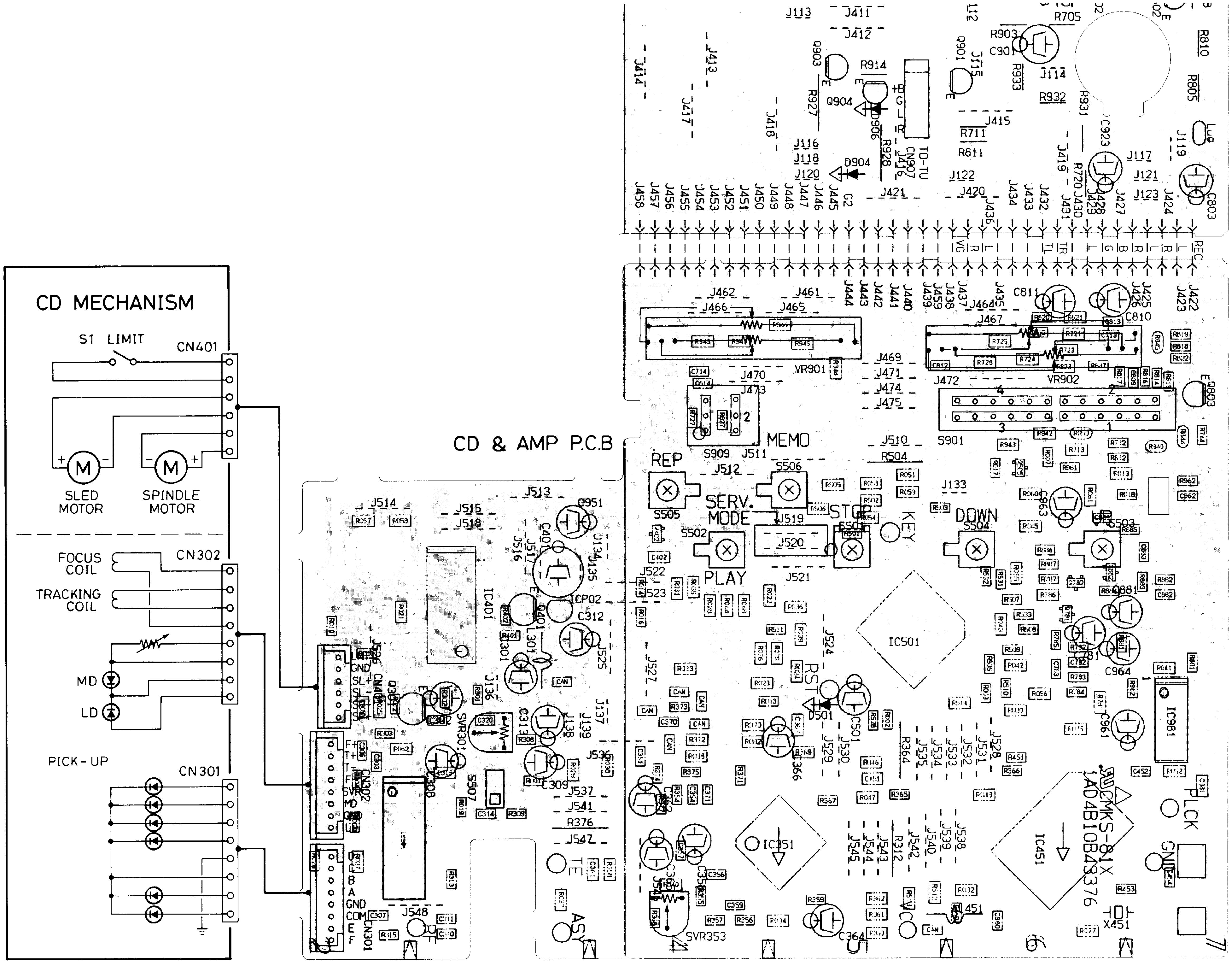
CMKS-81X
C
B
A
CN911
CN908
CN906
R-CH
SPEAKER
L-CH
CN905
R
L
CN905
TO SP
CN906
TO DG
CN901
TO HP
CN901
CMKS-81X
1AD4B10B43576
PRE-AMP & CD P.C.B
TUNER P.C.B(CN1)
CN907
P. HEAD
CN903
CN904
R/P HEAD
S902
S903
L901
TO-TU
CN907
G2 B2
G2B2
B37V G1B1
POWER AMP P.C.B
MEMO
REPT
PROG
PLAY
BATTERY TERMINAL P.C.B
CMKS-81X
1AD4B10B44000
BATTERY DC 12V
POWER SUPPLY P.C.B
CMKS-81X
1AD4B10B43973
DIP
CN917
AC 240V
50Hz
PT
T901
S908
CN915
TO AMP
FU901
T2A L 250V
CAD
FINE
1AD4B10B43476
CMKS-81X
DIP
SANYO
MARKING SIDE
LED506

SCHEMATIC DIAGRAM (CD)





CD MECHANISM
S1 LIMIT
CN401
SLED MOTOR
SPINDLE MOTOR
FOCUS COIL
TRACKING COIL
CN302
MD
LD
PICK-UP
CN301
CD & AMP P.C.B
REP
SERV. MODE
PLAY
MEMO
STOP
KEY
DOWN
UP
IC401
IC501
IC351
IC451
IC981
VR901
VR902
S901
S505
S502
S506
S504
S503
S909
SVR301
SVR353
TE
ASY
PLCK
GND
X451

IC DESCRIPTIONS

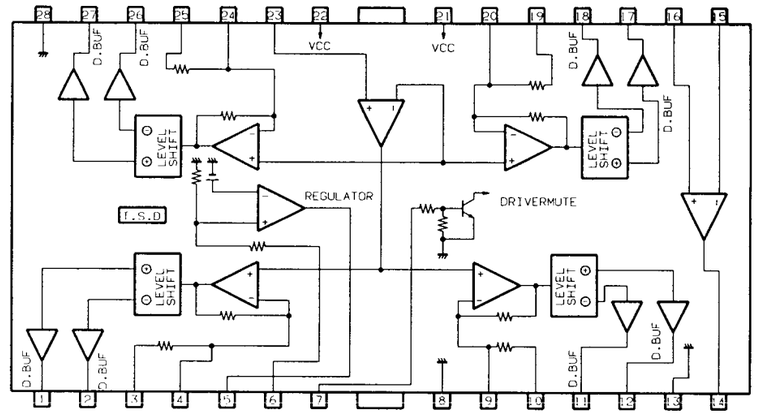
IC451 CXD1167Q (DIGITAL SIGNAL PROCESSOR)

No	Pin Name	Description
1	FSW	Output of Time Constant Selector for Output Filter of Spindle Motor
2	MON	Output of ON / OFF Control for Spindle Motor
3	MDP	Output of Driver for Spindle Motor. Rough Control of CLV-S Mode & Phase Control of CLV-P Mode
4	MDS	Output of Driver for Spindle Motor. Speed Control of CLV-P Mode
5	EFM	Input of EFM Signal from RF Amplifier
6	ASY	Output for Control Slice Level of EFM Signal
7	LOCK	GFS Signal Sampled WFCK / 16. In case of "H"; when output "H". In case "L" for eighth consecutive time ; when output "L".
8	VCOO	Output of VCO. In case of rocked in EFM Signal ; when f = 8.6436MHz.
9	VCOI	Input of VCO.
10	TEST	(0V)
11	PDO	Output of Phase Compared EMF Signal & VCO / 2.
12	Vss	GND (0V)
13	CLK	Input of Clock for Transfer Serial Data from CPU.
14	XLT	Input of Latch from CPU. Data (Serial Data from CPU) in 8 Bit Shift Register Latch to Each Register.
15	DATA	Input of Serial Data from CPU
16	XRST	Input of System Reset. "L" : Reset
17	CNIN	Input of Tracking Pulse
18	SENS	Output of Inner Status Corresponds Address
19	MUTG	Input of Muting. In case of "L" on ATTM of Inner Register A when "L" on MUTG is Normal Status. "H" is Non Sound Status.
20	CRCF	Output of Result of CRC Check (Sub Code Q)
21	EXCK	Input of Clock for Serial Output of Sub Code
22	SBSO	Serial Output of Sub Code
23	SUBQ	Output of Sub Code Q
24	SCOR	Output of Sub Code Sync SO + S1
25	SQCK	Clock for Read of Sub Code Q
26	SQEX	Selection Input of SQCK
27	DOTX	Output of Digital Out (In case of OFF in DO ; when Output WFCK)
28	GFS	Display Output of Rock status of Flame Sync
29	TEST	Hold "H" or "L". Don't Open
30	TEST	Hold "H" or "L". Don't Open
31	TEST	Hold "H" or "L". Don't Open
32	TEST	Hold "H" or "L". Don't Open
33	VDD	Power Supply (+5V)
34	TEST	Hold "H" or "L". Don't Open
35	TEST	Hold "H" or "L". Don't Open
36	TEST	Hold "H" or "L". Don't Open
37	TEST	Hold "H" or "L". Don't Open
38	TEST	Hold "H" or "L". Don't Open
39	TEST	Hold "H" or "L". Don't Open
40	TEST	Hold "H" or "L". Don't Open

No	Pin Name	Description
41	TEST	Hold "H" or "L". Don't Open
42	TEST	Hold "H" or "L". Don't Open
43	TEST	Hold "H" or "L". Don't Open
44	TEST	Hold "H" or "L". Don't Open
45	TEST	Hold "H" or "L". Don't Open
46	TEST	Hold "H" or "L". Don't Open
47	TEST	Hold "H" or "L". Don't Open
48	TEST	Hold "H" or "L". Don't Open
49	TEST	Hold "H" or "L". Don't Open
50	TEST	Hold "H" or "L". Don't Open
51	C4M	Divided output of X'tal. f = 4.2336MHz
52	Vss	GND (0V)
53	XTAI	Input of X'tal Oscillation Circuit. f = 8.4672MHz or 16.9344MHz by Mode Selection.
54	XTAO	Input of X'tal Oscillation Circuit. f = 8.4672MHz or 16.9344MHz by Mode Selection.
55	MD1	Input 1 of Mode Select.
56	MD2	Input 2 of Mode Select.
57	MD3	Input 3 of Mode Select.
58	SLOB	Input of Code Selection for Audio Data Output. 2's Complement Output by "L". Offset Binary Output by "H".
59	PSSL	Input of Mode Selection for Audio Date Output. Serial Output by "L". Parallel Output by "H".
60	APTR	Control Output for Aperture Compensator. In case of R-ch; when "H"
61	APTL	Control Output for Aperture Compensator. In case of L-ch; when "H"
62	DA01	In Case of PSSL = "H"; when DA01(LSB of Parallel Voice Date) Output. In Case of PSSL = "L"; when C1F1 Output.
63	DA02	In Case of PSSL = "H"; when DA02 Output. In Case of PSSL = "L"; when C1F2 Output.
64	DA03	In Case of PSSL = "H"; when DA03 Output. In Case of PSSL = "L"; when C2F1 Output.
65	DA04	In Case of PSSL = "H"; when DA04 Output. In Case of PSSL = "L"; when C2F2 Output.
66	DA05	In Case of PSSL = "H"; when DA05 Output. In Case of PSSL = "L"; when C2FL Output.
67	DA06	In Case of PSSL = "H"; when DA06 Output. In Case of PSSL = "L"; when C2PO Output.
68	DA07	In Case of PSSL = "H"; when DA07 Output. In Case of PSSL = "L"; when RFCK Output.
69	DA08	In Case of PSSL = "H"; when DA08 Output. In Case of PSSL = "L"; when WFCK Output.
70	DA09	In Case of PSSL = "H"; when DA09 Output. In Case of PSSL = "L"; when PLCK Output.
71	DA10	In Case of PSSL = "H"; when DA10 Output. In Case of PSSL = "L"; when UGFS Output.
72	DA11	In Case of PSSL = "H"; when DA11 Output. In Case of PSSL = "L"; when GTOP Output.
73	VDD	Power Supply (+5V)
74	DA12	In Case of PSSL = "H"; when DA12 Output. In Case of PSSL = "L"; when RAOV Output.
75	DA13	In Case of PSSL = "H"; when DA13 Output. In Case of PSSL = "L"; when C4LR Output.
76	DA14	In Case of PSSL = "H"; when DA14 Output. In Case of PSSL = "L"; when BCLK Output.
77	DA15	In Case of PSSL = "H"; when DA15 Output. In Case of PSSL = "L"; when BCLK Output.
78	DA16	In Case of PSSL = "H"; when DA16(MSB of Parallel Voice Data)Output. In Case of PSSL = "L"; when DATA Output.
79	WDCK	Output of Strobe Signal. In Case of DF = ON; when 176.4kHz. In Case of DF = OFF; when 88.2kHz.
80	LRCK	Output of Strobe Signal. In Case of DF = ON; when 88.2kHz. In Case of DF = OFF; when 44.1kHz.

IC BLOCK DIAGRAM & DESCRIPTIONS

IC401 BA6296FP (PICK-UP & MOTOR DRIVER)



T.S.D : THERMAL SHUT DOWN D.BUF : DRIVE BUFFER

IC501 TMP47C440-1049 (MICRO PROCESSOR)

No.	Pin Name	Description
1	D MUTE	Mute ON / OFF of Motor Driver IC
2	DATA	Output of Command Data (DSP · SSP)
3	XLT	Output of Latch (DSP · SSP)
4	CLK	Output of Clock (DSP · SSP)
5	KEY IN	Input of Key (A / D Conversion Input)
6	PLAY LED	Output of Play LED ON / OFF
7	REP LED	Output of Repeat LED ON / OFF
8	PROG LED	Output of Program LED ON / OFF
9	+20 LED	Output of +20 LED ON / OFF
10	A MUTE	Output of Audio Mute Control
11	EMP	Output of Emphasis Control ON / OFF
12	SEG A	Output of 7-Segment LED ON / OFF
13	SEG B	Output of 7-Segment LED ON / OFF
14	SEG C	Output of 7-Segment LED ON / OFF
15	SEG D	Output of 7-Segment LED ON / OFF
16	VSS	Ground (GND)
17	NC	Not Connection
18	SEG E	Output of 7-Segment LED ON / OFF
19	SEG F	Output of 7-Segment LED ON / OFF
20	SEG G	Output of 7-Segment LED ON / OFF
21	SEG H	Output of 7-Segment LED ON / OFF
22	SYNC REC	Input of Synchronous Record Signal ON / OFF

No.	Pin Name	Description
23	OPEN SW	Input of CD Lid Open Switch ON / OFF
24	LIMIT SW	Input of PICK-UP Limit Switch ON / OFF
25	GFS	Input of GFS Signal
26	TEST	Connected to GND
27	XIN	Connection Terminal of Oscillation (4.19MHz)
28	XOUT	Connection Terminal of Oscillation (4.19MHz)
29	RESET	Input of Reset Signal
30	SENS	Input of SENS Signal
31	IR	Input of Remote Control Signal (Not Used)
32	(IR)	Input of Remote Control Signal (Not Used)
33	SCOR	Input of SCOR (SUBQ Data Trigger) Signal
34	XRST	Output of Reset Signal for Periphery IC's
35	SQCK	Output of Clock for SUBQ Data Input
36	SUBQ	Input of SUBQ Data
37	MUTG	Output of Digital Mute Control (ON / OFF)
38	NC	Not Connection
39	VDD	+5V
40	VAREF	Reference Voltage for A / D Conversion (+5V)
41	VASS	Reference Voltage for A / D Conversion (GND)
42	FOK	Input of FOK Signal
43	LDON	Output of Laser ON / OFF
44	P CON	Output of Power Supply Control for Periphery IC's (ON / OFF)

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