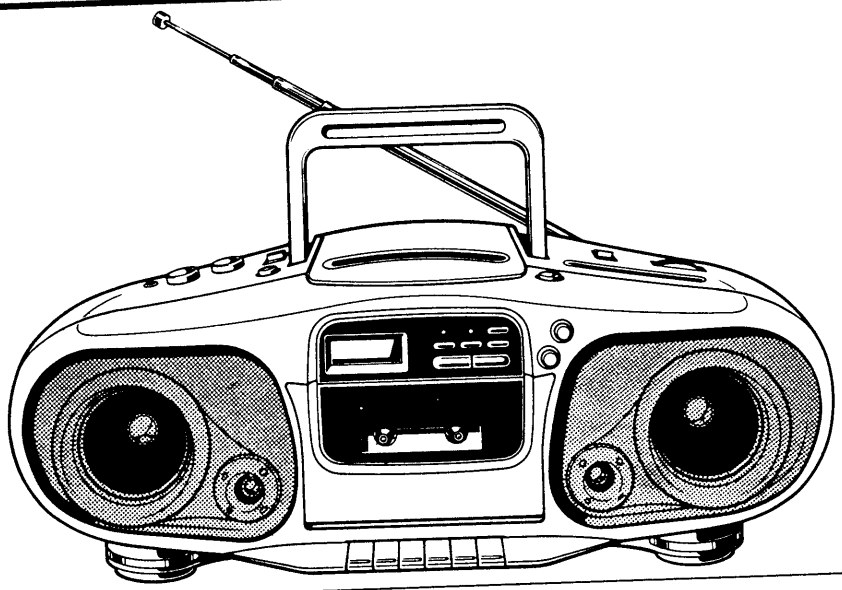
SAMSUNG Electronics

SERVICE MANUAL
MODEL: RCD-990

RADIO CASSETTE RECORDER WITH COMPACT DISC PLAYER



SPECIFICATION

GENERAL

Frequency Response	:	20 ~ 20000Hz
Speakers	:	ø 102mm x 2
Power Sources	:	AC: See rating label DC: 12V (D, UM1, HP2 x 8)
Output Power	:	4W/CH (at DC)
Power Consumption	:	16W
Dimension	:	554(W) x 186(H) x 198(D)mm
Weight	:	3.3Kg (Without batteries)
Headphone Jack	:	ø 3.5mm (Stereo)

RADIO

Frequency range	:	FM: 88 – 108MHz AM(MW): 530 – 1605KHz LW: 150 – 285KHz SW: 6 – 18MHz
I.F	:	FM: 10.7MHz SW/AM(MW)/LW: 455 or 465KHz
Antenna	:	FM/SW: Telescopic rod antenna AM(MW)/LW: Ferrite bar antenna

TAPE

Frequency Response	:	63Hz ~ 12.5KHz
Signal to Noise Ratio		
Playback	:	40 dB
Record/Playback	:	28 dB
Separation	:	30 dB
Total Harmonic Distortion		
Playback	:	4%
Record/Playback	:	6%
Erasing Effect	:	50 dB

COMPACT DISC PLAYER

Frequency Range	:	20 ~ 20000Hz
Dynamic Range	:	83 dB (1KHz with filter)
Signal to Noise Ratio	:	82 dB (1KHz)
Channel Separation	:	70 dB (1KHz with LPF for 30KHz)
D/A Conversion	:	16 bits

Design and specifications are subject to change upon improvement without prior notice.

CONTENTS

— OPTION —

UL/CSA	:	American (UL)/Canadian (CSA) model	AUS	:	Australian model
FTZ	:	Germany model	LW	:	LW band equipped unit
BS	:	UK model	SW	:	SW band equipped unit

■ SAFETY PRECAUTION

1. CLASS 1 LASER PRODUCT

This compact disc player is classified as a CLASS 1 laser product.

2. LASER WARNING LABEL

The label shown below may be affixed or not according to country.

(UL)

This Product Compiles with DHHS Rules 21CFR, Sub chapter J.At date of Manufacture.

(CSA)

CERTIFIED ONLY TO CANADIAN ELECTRICAL CODE.

CERTIFIE EN VERTU DU CODE CANADIAN DE LELETRICITE SEULEMENT

(EU)

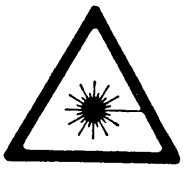
CLASS 1
LASER PRODUCT

Location : Enclosure back.

(SCAN)

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UED AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

(EU)



UL	:	Manufactured for U.S.A. Market.
CSA	:	Manufactured for Canadian Market.
EU	:	Manufactured for European Market
SCAN	:	Manufactured for Scandinavian Market.

Location : on the disc clamper or inner side of CD door or nearby CD chassis.

3. LASER BEAM WARNING

ADVERSEL — USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING — OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRALEN ÄR FARLIG.

VARITUS — LAITE SISÄLTÄA LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTA SILMILLE VAARALLISTA LASERSATEILYÄ.

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

4. LASER DIODE SPECIFICATION (OPTICAL PICK-UP)

- Material: AlGaAs
- Wavelength: 760-800nm
- Emission duration: Continuous
- Laser Output: 0.2mW
  * This output is the value measured at distance 1.6mm from the objective lens surface on the optical pick-up block.
- Classification: CLASS 1

5. WARNING FOR 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.

VARNING: När underhållningsarbeten utförs, närma dig försiktigt och se inte på laserutstrålningen på för näre häll. Ifall det är nödvändigt att betrygga laserstrålens utströmning. Var säker att kontrollera detta från ett avstånd av mer än 30cm (11.81 inch.) från den objektiva linsens yta på den optiska utsåndningspunkten.

ADVARSEL: Når repareringsarbejdet udfoeres, naerm dig forsigtigt og se ikke på laserudstrålingen på for naer hånd. It ilfaeldet at det er noedvaendigt at bestemme laserstrålens udstråling. Vaer sikker på kontrollere dette fra en afstand af mere end 30cm (11.81 inch.) fra den objektive linses overflade på den optiske udsendningspunkt.

VAROITUS: Silmiä on varottava viemästä liian läbeiie Laser-poistokanavaa huoiion aikana. Jos on välttämätöntä varmistaa Laser-Säteen päästö, pysyttels sitä tarkasteltaessa vähintään 30cm etäiyydellä optisen lukon objecktiivilinssin pinnasta.

■ SERVICING NOTE

1. Disconnect power supply cord before separating cabinet for servicing as you may experience an electric shock.
2. Avoid repairing under direct sunshine and heat which may cause cabinet, transistor and IC to be transformed or misoperate.
3. Use a soft cotton swab moistened with warm water or neutral cleaner when parts of a unit need to be cleaned.
4. When replacing parts with safety features built in, be sure to use specified parts with same specifications only.
5. Avoid repairing the set near a TV or any other magnetic forces.
6. Disconnect the plug from wall socket during electric storm to reduce the risk of damage.
7. Be careful of electrostatic damage when replacing the control IC such as μ-COM, LSI and pick-up.
8. Be sure not to separate the pick-up from the unit and not to touch the ALPC (Automatic Laser Power Control) circuit.

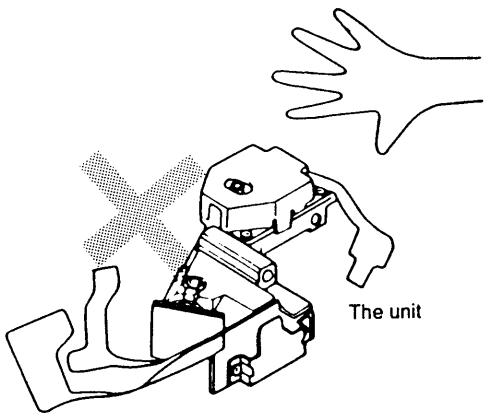
HANDLING THE OPTICAL PICK-UP

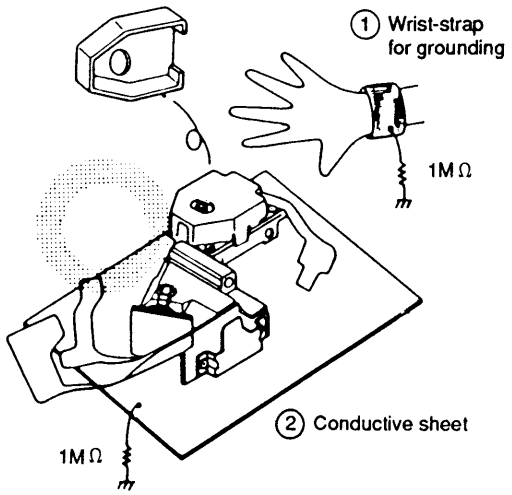
* The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

1. Placè a conductive sheet on the workbench. (The black sheet used as wrapping for repair parts.)
2. Place the set on the conductive sheet so that the chassis is grounded to the sheet.
3. Place your hands on the conductive sheet. (This gives them the same ground as the sheet.)
4. Remove the optical pick up block.
5. Perform work on top of the conductive sheet.
   Be careful not to let your clothes or any other static sources touch the unit.

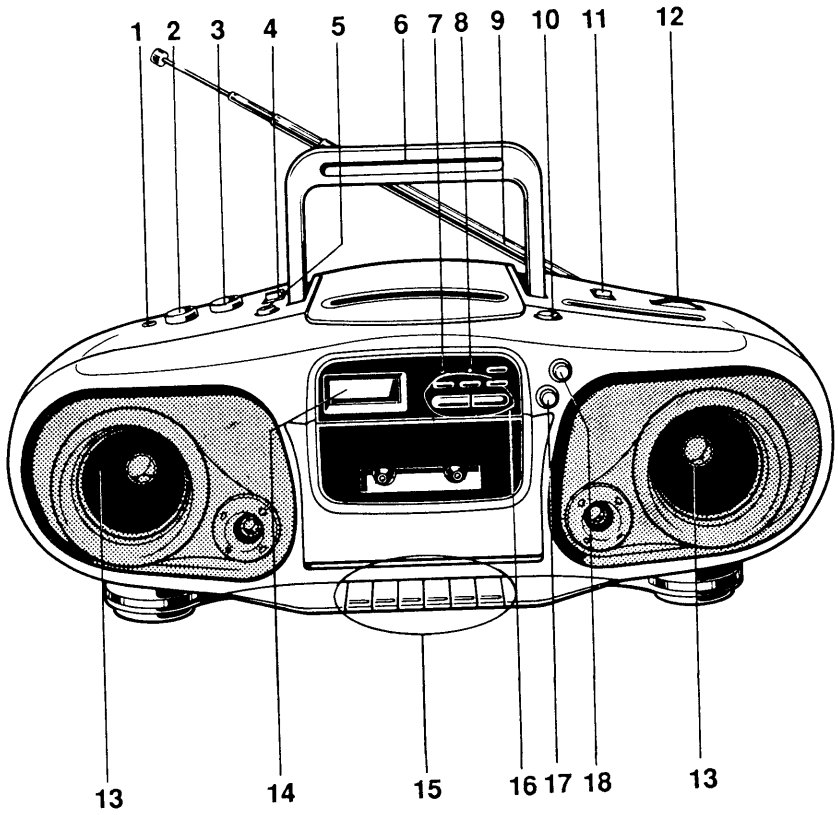
* Be sure to put on a wrist-strap grounded to the sheet.
* Be sure to lay a conductive sheet made of copper etc. which is grounded to the table.



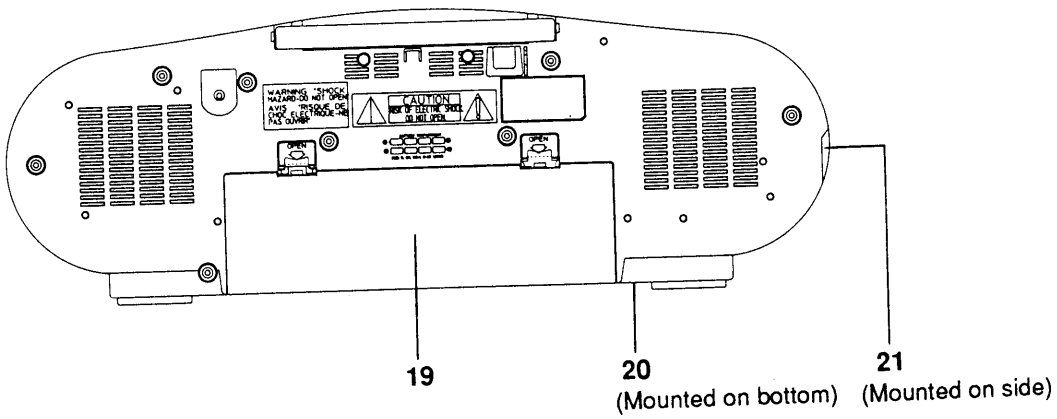


■ LOCATION OF CONTROLS

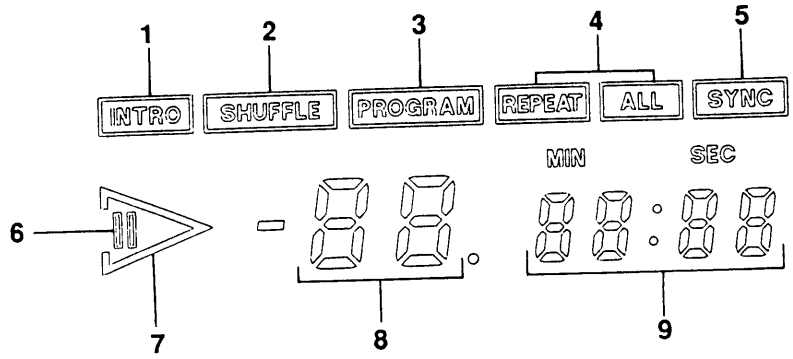
[FRONT]



[REAR]



[CD OPERATION LCD]



[FRONT]

1. PHONES jack
2. VOLUME control (with LOUDNESS)
3. TONE control
4. FUNCTION selector
   (TAPE • RADIO OFF/RADIO/CD)
5. TAPE SEL./FM MODE/BEAT-CUT button
   NORMAL/STEREO
   CrO_2/METAL PB/MONO
6. Handle
7. POWER indicator
8. FM-ST indicator
9. FM rod antenna
10. CD OPEN button
11. BAND selector
12. TUNING knob
13. Speakers
14. CD operation LCD
15. Deck operation buttons
    ● RECord button
    ► PLAY button
    ◄◄ REW button
    ►► F.FWD button
    ■▲ STOP/EJECT button
    ▮▮ PAUSE button
16. CD operation buttons
    + 10 skip button
    MODE button
    PROGRAM button
    DISPLAY button
    SKIP & SEARCH button
17. STOP button (CD)
18. PLAY/PAUSE button (CD)

[REAR]

19. Battery compartment
20. Voltage selector (optional : Mounted on bottom)
21. AC IN ~ (Mounted on side)

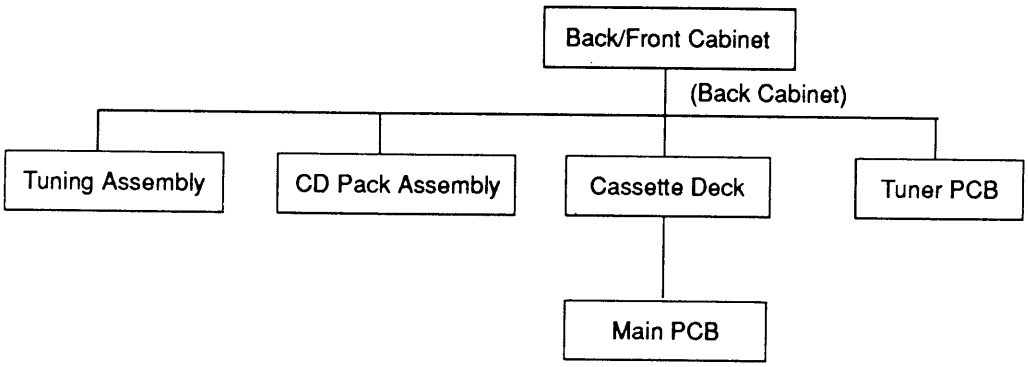
[CD OPERATION LCD]

1. INTRO indicator (Scanning all tracks for 10 seconds successively.)
2. SHUFFLE indicator (Tracks are played in a random order.)
3. PROGRAM indicator (Up to a maximum of 16 tracks to be programmed.)
4. REPEAT, ALL indicator (A selected sequence or tracks are played repeatedly.)
5. SYNC indicator (Recording starts from the beginning of the disc.)
6. Pause indicator
7. Play indicator
8. Track number indicator
9. Time indicator

■ DISASSEMBLY INSTRUCTION

* Before disassembling the unit, remove batteries or AC power cord.

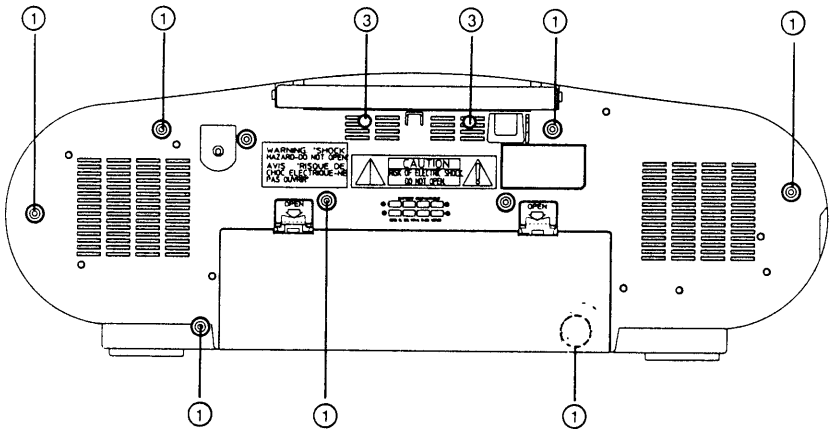
1. DISASSEMBLY PROCEDURE OUTLINE

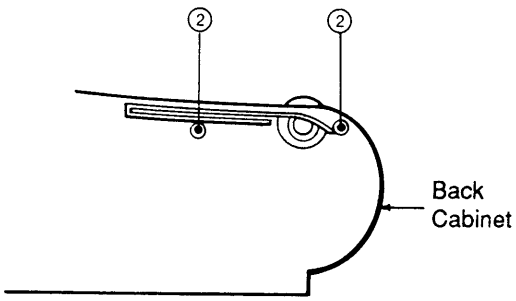


2. DISASSEMBLY PROCEDURE

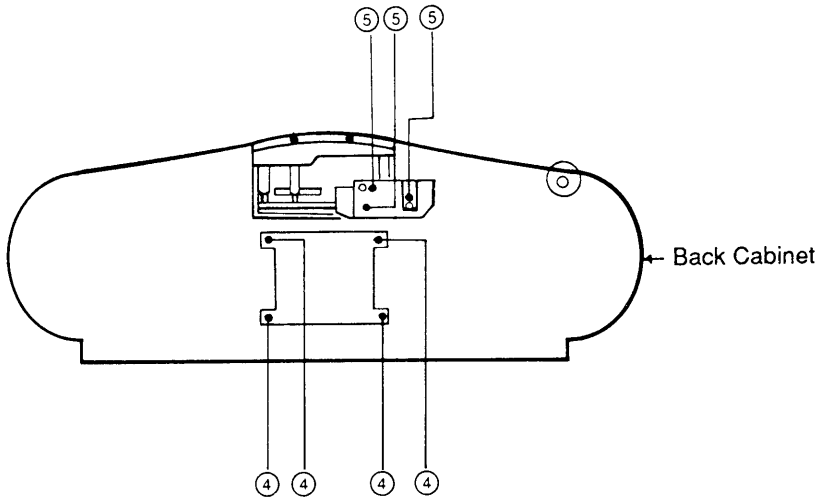
1) FRONT/BACK CABINET
   (1) Release 7 screws (①).
   (2) Disconnect connecting wires.
   (3) Split Front and Back Cabinet.

2) TUNING ASSEMBLY
   (1) Release 2 screws (②).
   (2) Remove Tuning Assembly.

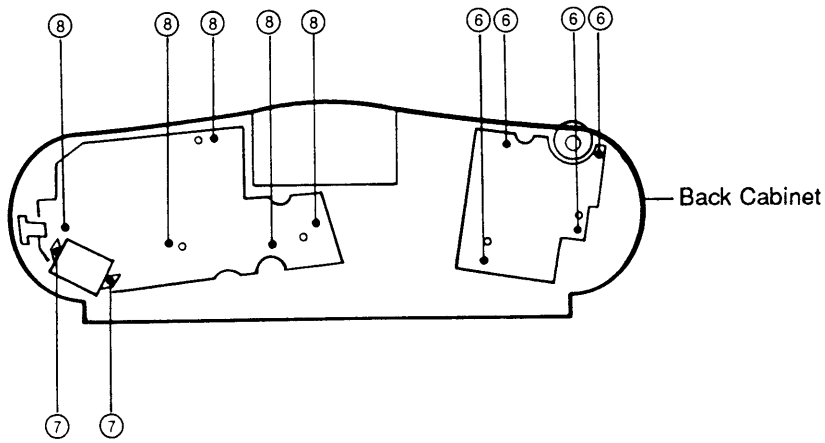




3) CD PACK ASSEMBLY & CASSETTE DECK
   (1) Release 2 screws (③ : page 6).
   (2) Remove CD pack assembly.
   (3) Release 4 screws (④).
   (4) Disconnect connecting wires.
   (5) Release 3 screws (⑤).
   (6) Remove CD control knob.



4) TUNER PCB & MAIN PCB
   (1) Release 4 screws (⑥).
   (2) Remove Tuner PCB.
   (3) Release 2 screws (⑦).
   (4) Release 5 screws (⑧).
   (5) Remove Main PCB.

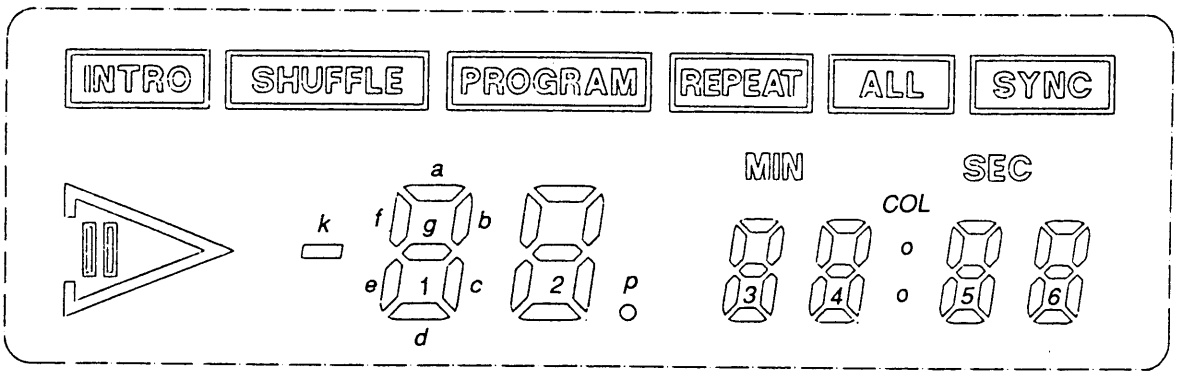


■ DESCRIPTION OF LCD SEGMENT

If one or all of the LCD Segments (see segment diagram below) don't work, check if IC7530 and LCD pins are properly connected refering to the chart below.

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14
COM1	COM1			INTRO	K	1a		SHUFFLE	2a	P	PROGRAM	3a	MIN	REPEAT
COM2		COM2		▷	1f	1g	1b	2f	2g	2b	3f	3g	3b	4f
COM3			COM3	▯▯	1e	1d	1c	2e	2d	2c	3e	3d	3c	4e

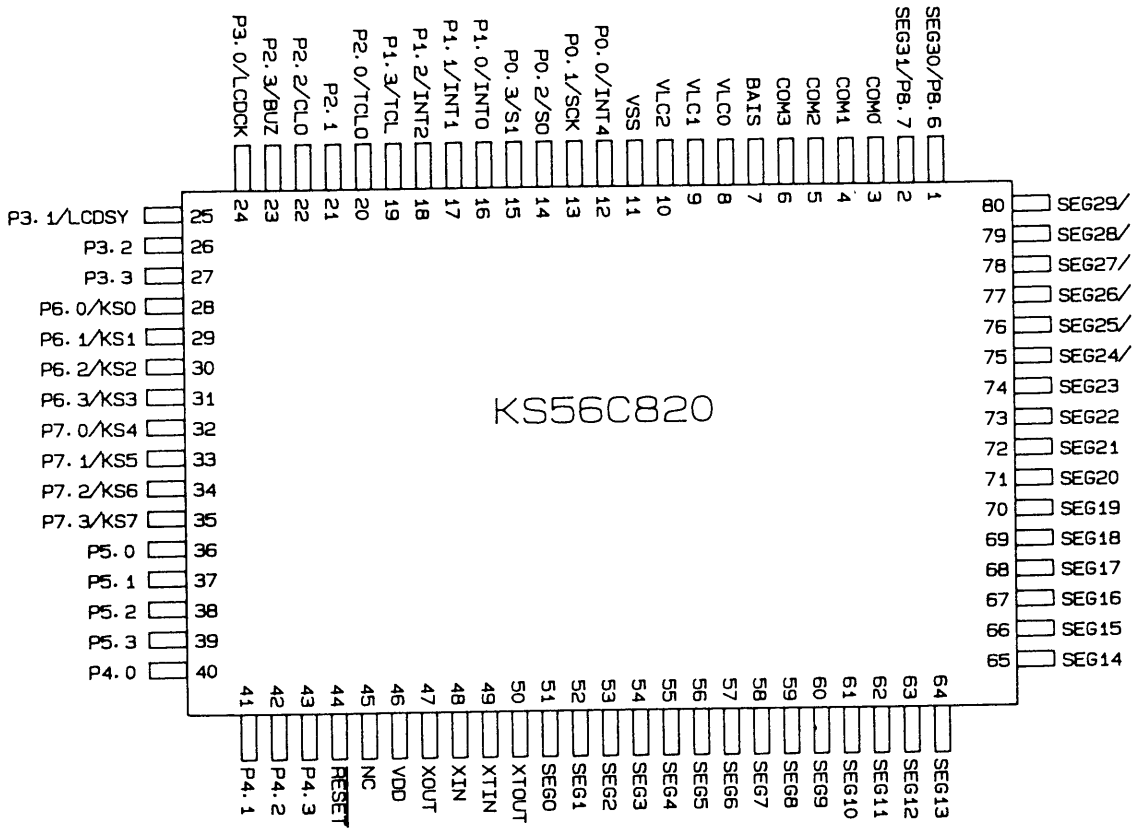
No	15	16	17	18	19	20	21	22
COM1	4a	COL	ALL	5a	SEC	SYNC	6a	
COM2	4g	4b	5f	5g	5b	6f	6g	6b
COM3	4d	4c	5e	5d	5c	6e	6d	6c



■ BASIC CIRCUIT OPERATION

1. MICOM PIN DESCRIPTION

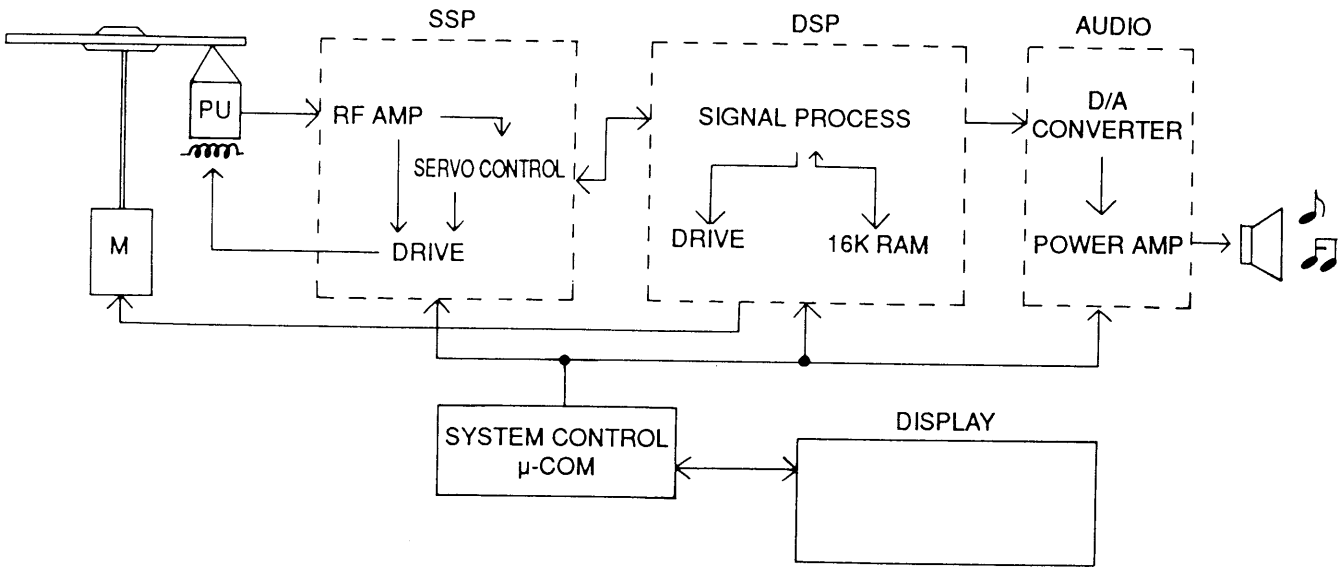
• KS56C820 (MICOM) : IC7530



Pin Name	Pin Description	
P1.0-P1.3	4-bit Input	Internal pull-up resistor can be specified in 4-bit unit by solftware
P2, P7	4-bit Input/Output	
P3, P6	I/O mode selectable in 1-bit unit by softwarde	
P4, P5	4-bit input/output, N-ch open drain	
P8.0-P8.7	Outputs in 1-bit unit (shared with segment outputs)	
SEG0-SEG23	Segment output for LCD display	
SEG24-SEG31	Segment output for LCD display (shared with Port 8)	
COM0-COM3	Common signal output for LCD display	
VLC0-VLC2	LCD power supply pin	
BIAS	LCD power supply control pin for 3/5V operating	
LCDCK	LCD clock output for display expansion	
LCDSY	LCD sync. clock output for display expansion	
TCL	Timer/Counter external clock input	
TCLO	Timer/Counter clock output	
INT0, 1, 2, 4	External interrupt input	
CLO	Clock output	
BUZ	2KHz clock output for buzzer	
KS0-KS7	Semi-interrupt input detecting external falling edge	
SCK, SI, SO	SCK: serial clock, SI: serial input, SO: serial output	
X_{IN}, X_{OUT}	Crystal/Ceramic or RC clock I/O for Main-system clock	
XT_{IN1} XT_{OUT}	Crystal clock I/O pins for sub-system clock	

2. CD BASIC CIRCUIT OPERATION

1) CD BLOCK DIAGRAM

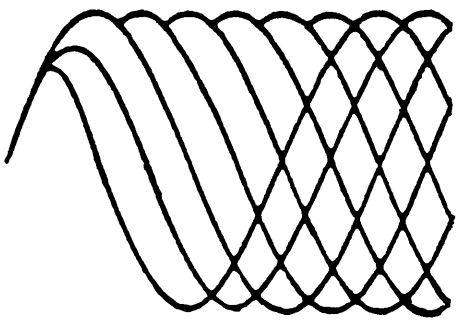


2) OPTICAL PICK UP UNIT

CD system use laser beam to detect the signals recorded onto the discs.
The pick up detects the presence or absence of data pits on the disc surface, emitting laser beam capable of being incorporated into the pick up and converting signals from the disc into electrical signals.

3) RF AMPLIFIER

After the optical pick up detects the presence or absence of data pits on the disc surface the resulting signals refered to as RF or Eye pattern are not apparent and quite similiar to the sine waveform.
The signal waveform varies depending on the length and width of each pit on a disc surface. The RF signals can hardly be seen on screen. The eyepattern are first amplified by the RF amplifier, and then demodulated by using the EFM code (Eight to Fourteen Modulation --> 8 bits --> 14 bit modulation).



(EYE PATTERN)

4) SERVO

CDP SERVO circuitry is largely divided into the Focus and Tracking Servo.

(1) FOCUSING SERVO: It vertically shifts the objective lense so that the beam correctly fall on the disc surface to read out the data recorded on the disc.

(2) TRACKING SERVO: It controls the objective lense to maintain proper tracking.

① Normal Tracking Servo : It shifts the objective lense for proper tracking (1.6 μm).
② Feed Servo : It shifts the optical pick up itself for tracking.

5) DSP (Digital Signal Processor)

DSP (Digital Signal Processor) is basically composed of the EFM (Eight to Fourteen Modulation) decoder and Error Correction System.
The EFM decoder converts the serial 14 bit EFM code to an 8 bit parallel code which is directed to a bi-directional bus and placed in the RAM. The contents of the RAM are read by the Error Detection Circuit. The Error Detection Circuit extracts the interleaved data samples so that the signal is deinterleaved and detects most of the errors present in the signal due to flaws on the disc.
The decoded signal, with error correction, is output from the Memory Control circuit in a 16 bit serial code and directed to the D/A Converter. The Memory Control circuit also outputs a signal, derived from the Clock, which denotes the linear velocity of the disc. These signals are directed to the CLV (Constant Linear Velocity) circuit to correct any error in the disc speed.

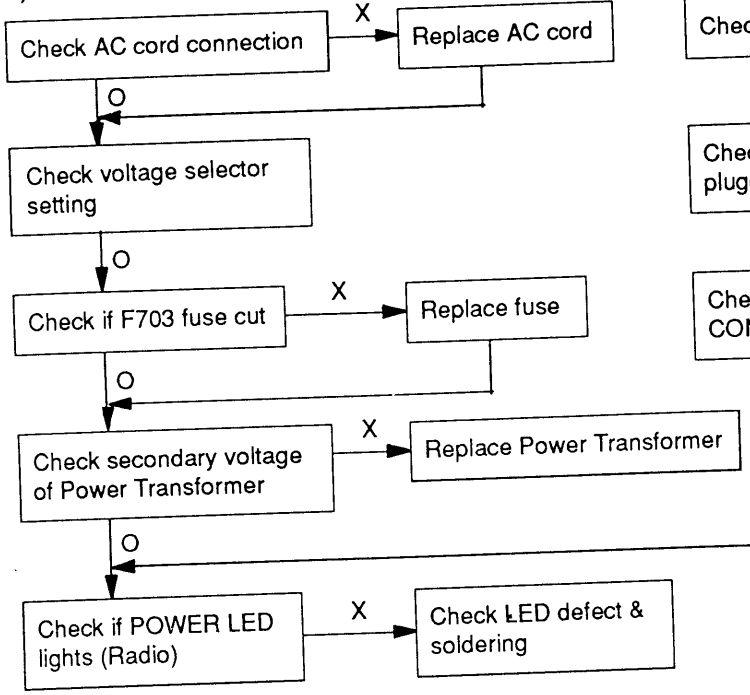
6) D/A CONVERTER

The signal output from the Memory Control in the Error Correction circuit is a serial 16 Bit NRZ (Non-Return to Zero), error corrected and de-interleaved digital code. The signal must now be converted to an analog signal suitable for application to a stereo pre-amplifier. This is the function of the D/A (Digital to Analog) Converter and Analog Amplifier.

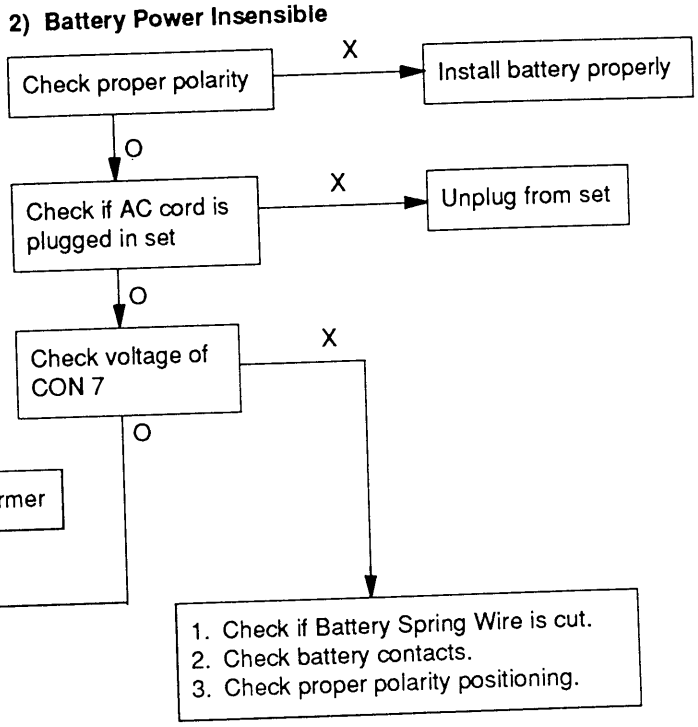
■ TROUBLESHOOTING

1. RADIO CASSETTE SECTION

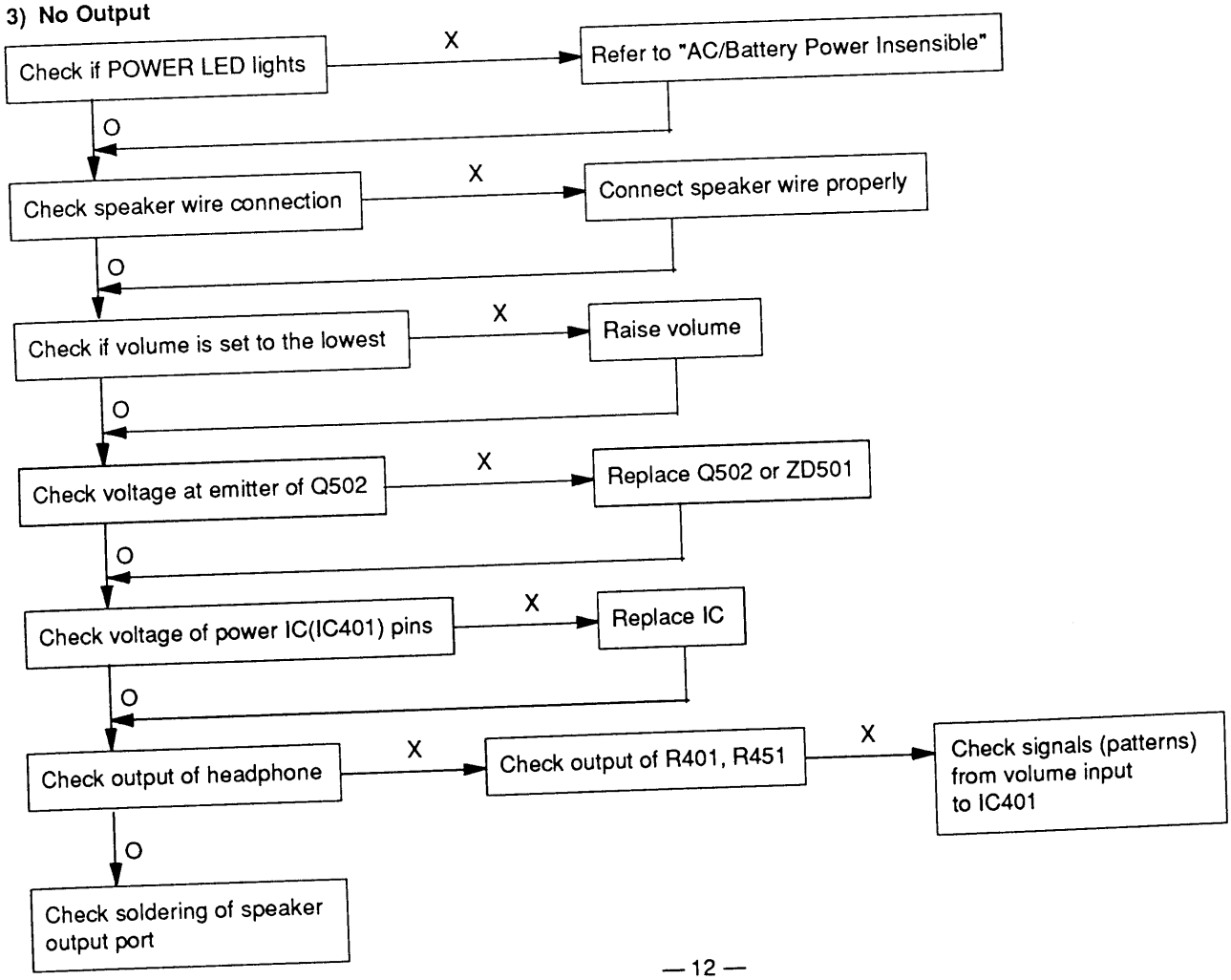
1) AC Power Insensible



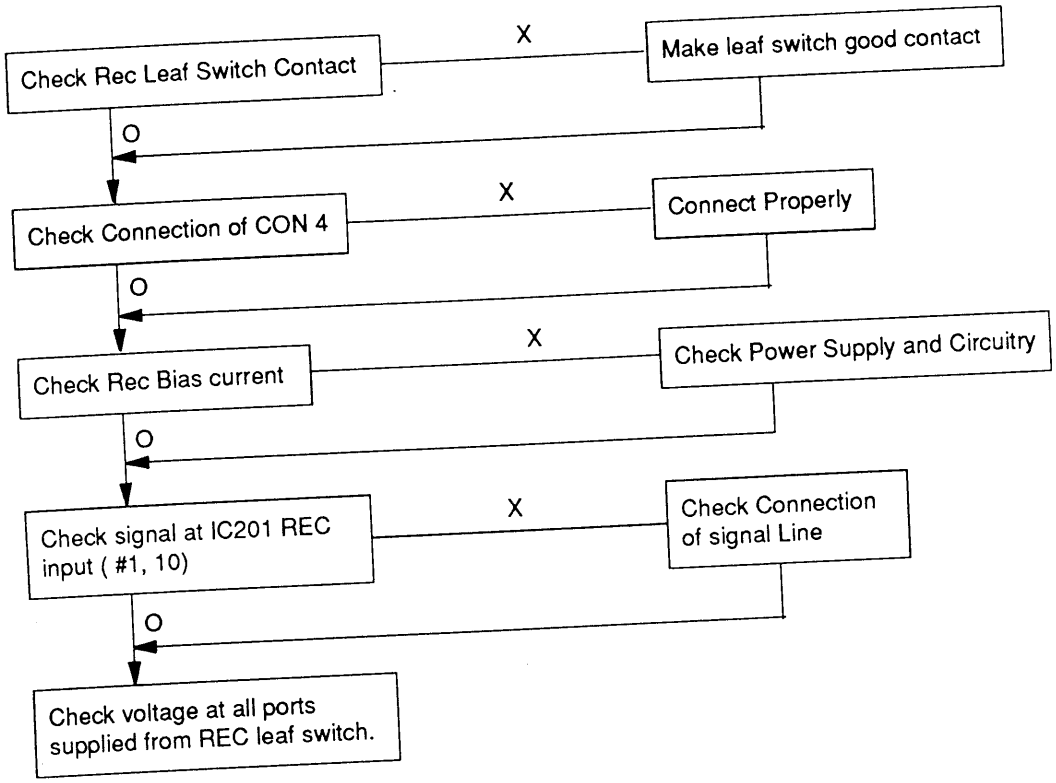
2) Battery Power Insensible



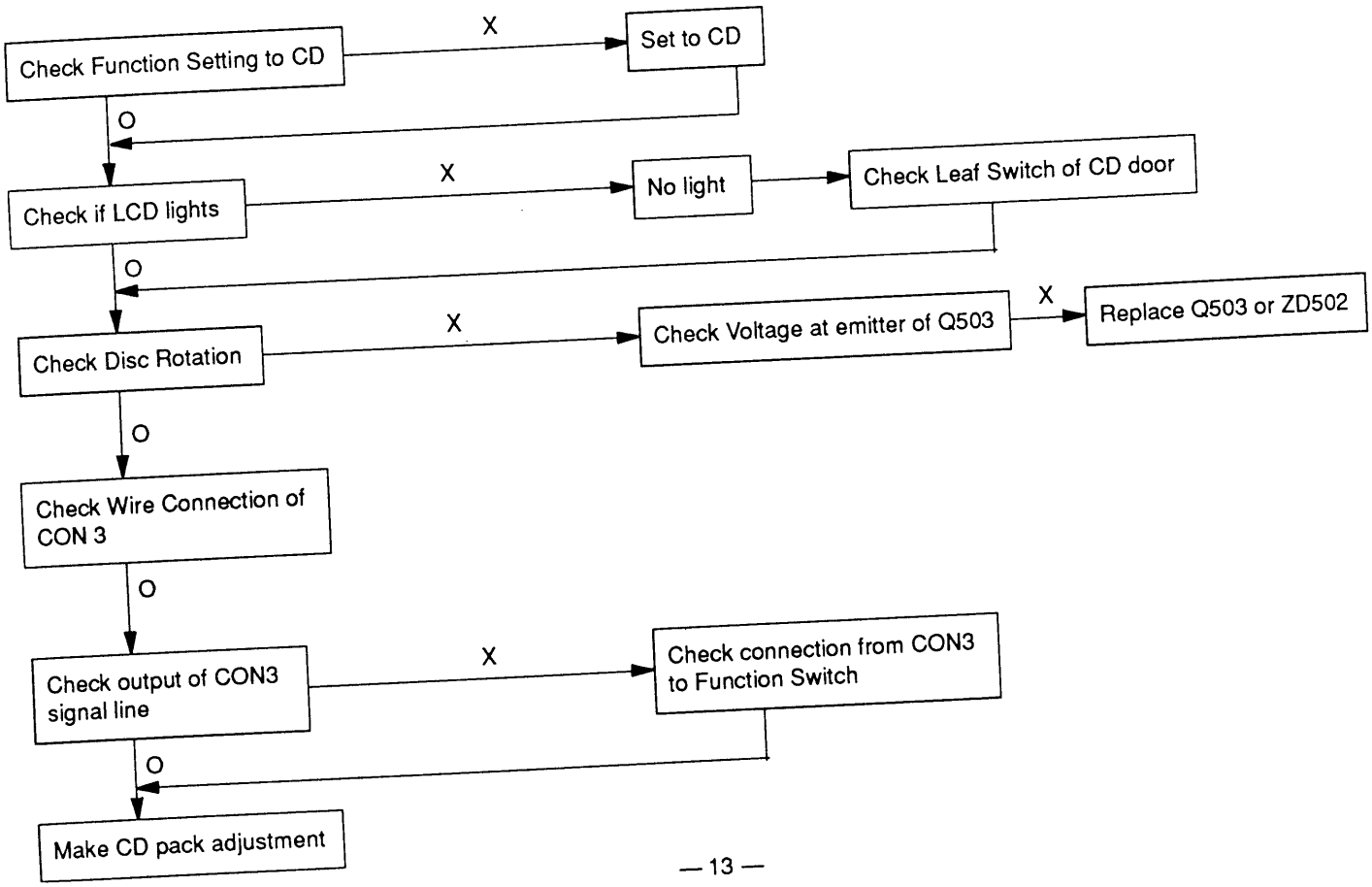
3) No Output



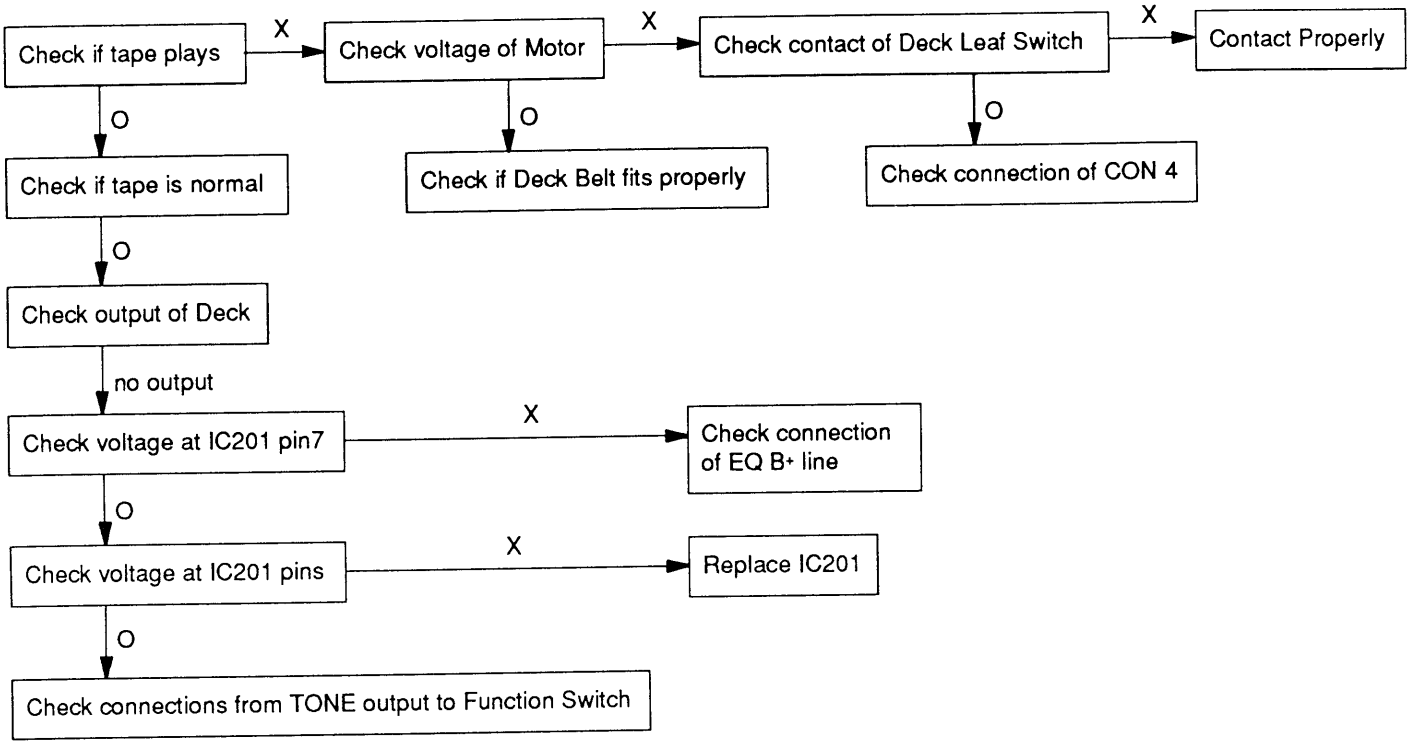
4) Record Not Working



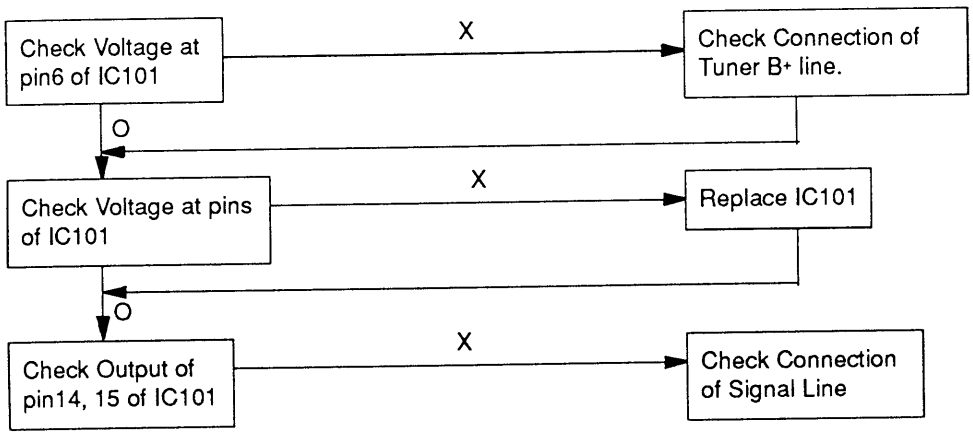
5) Compact Disc Inoperative



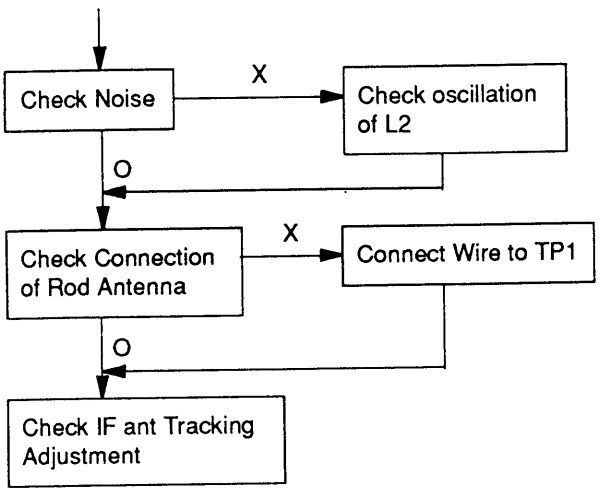
6) Tape Not Working



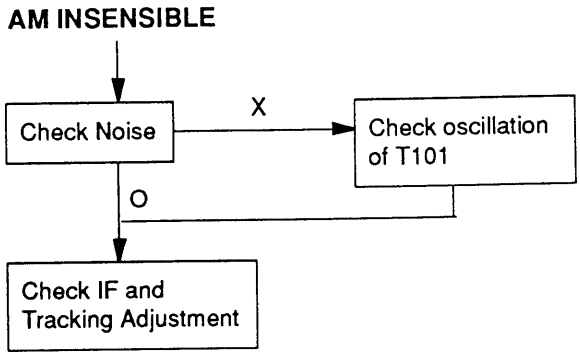
7) Radio Insensible



FM INSENSIBLE



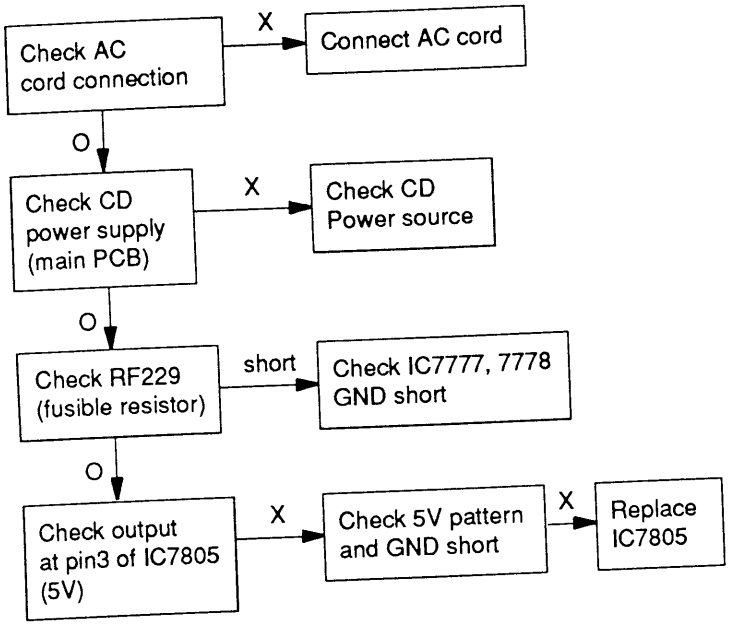
AM INSENSIBLE



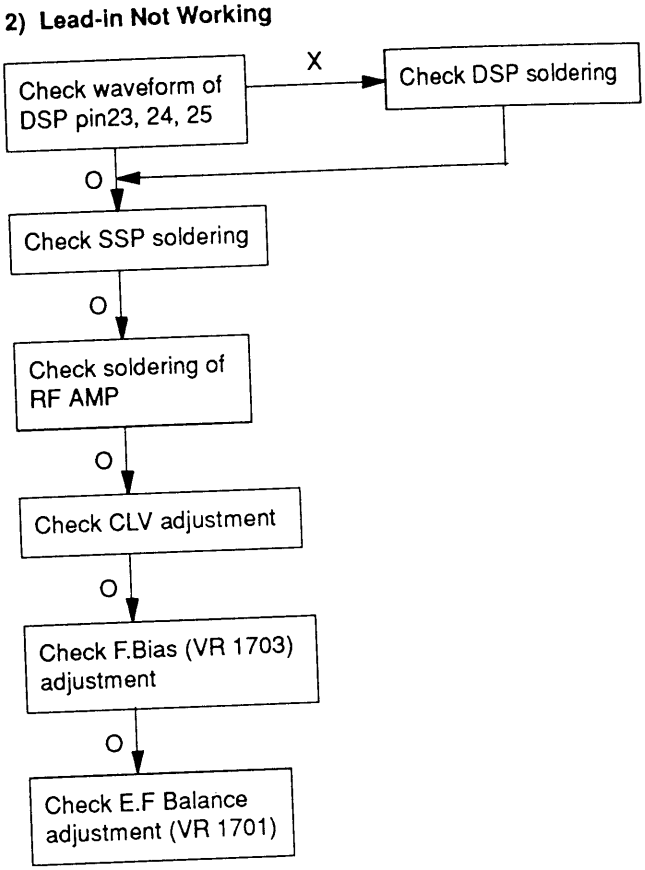
2. COMPACT DISC SECTION

* Refer to Schematic Diagram

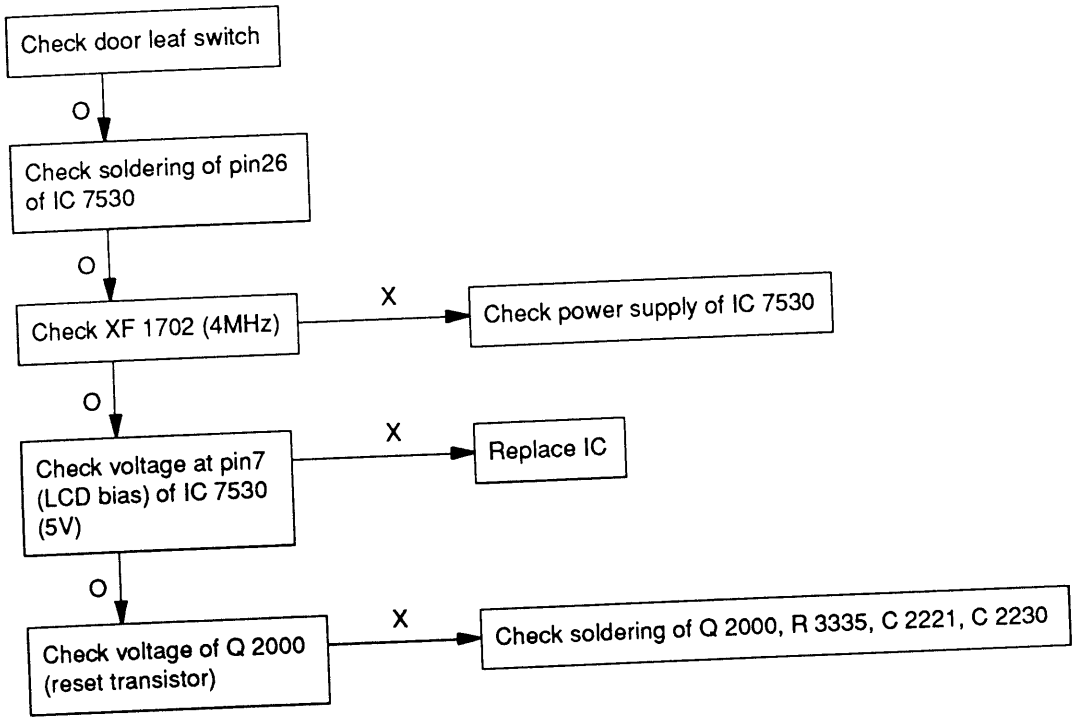
1) Power Not Sensible



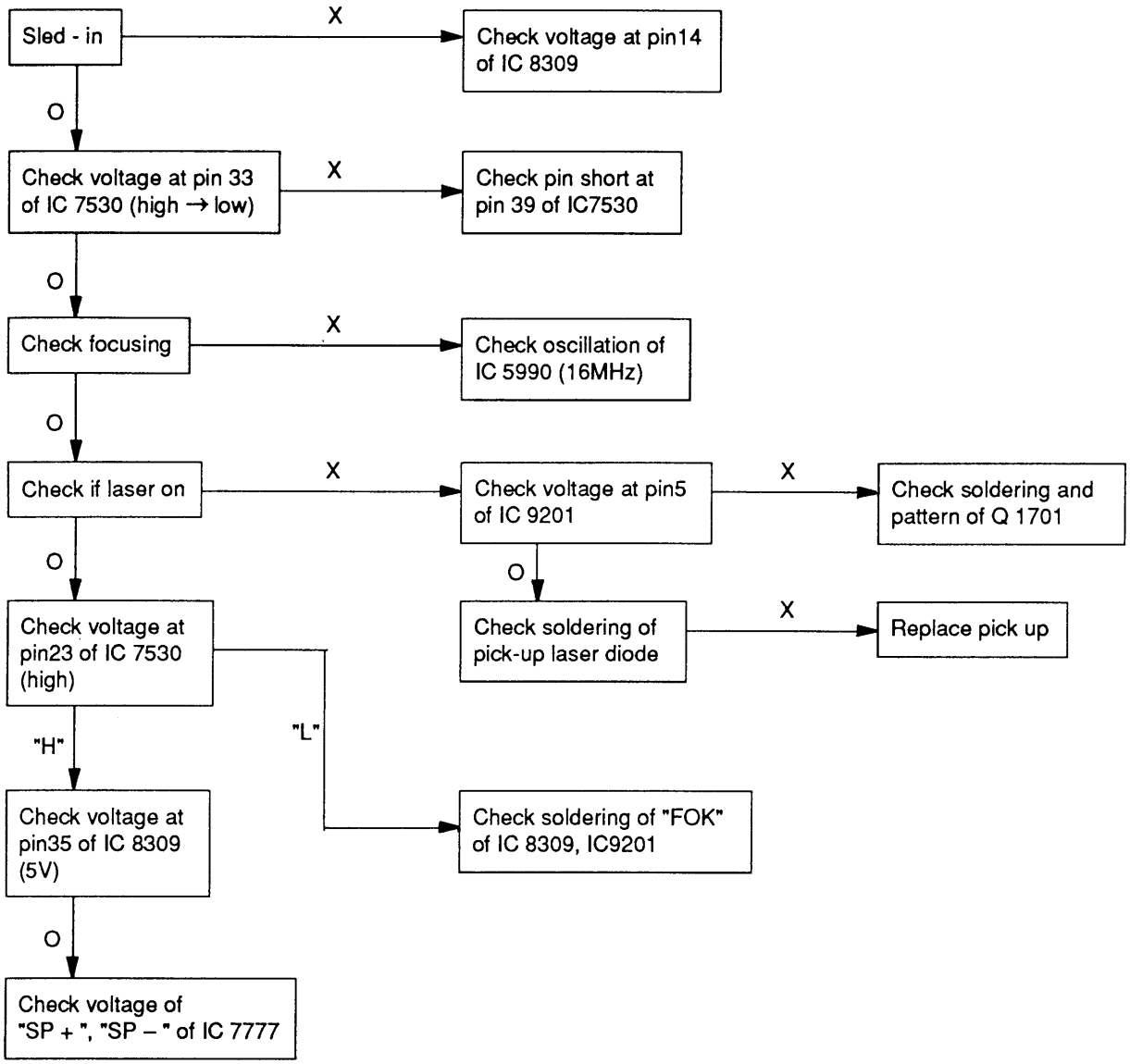
2) Lead-in Not Working



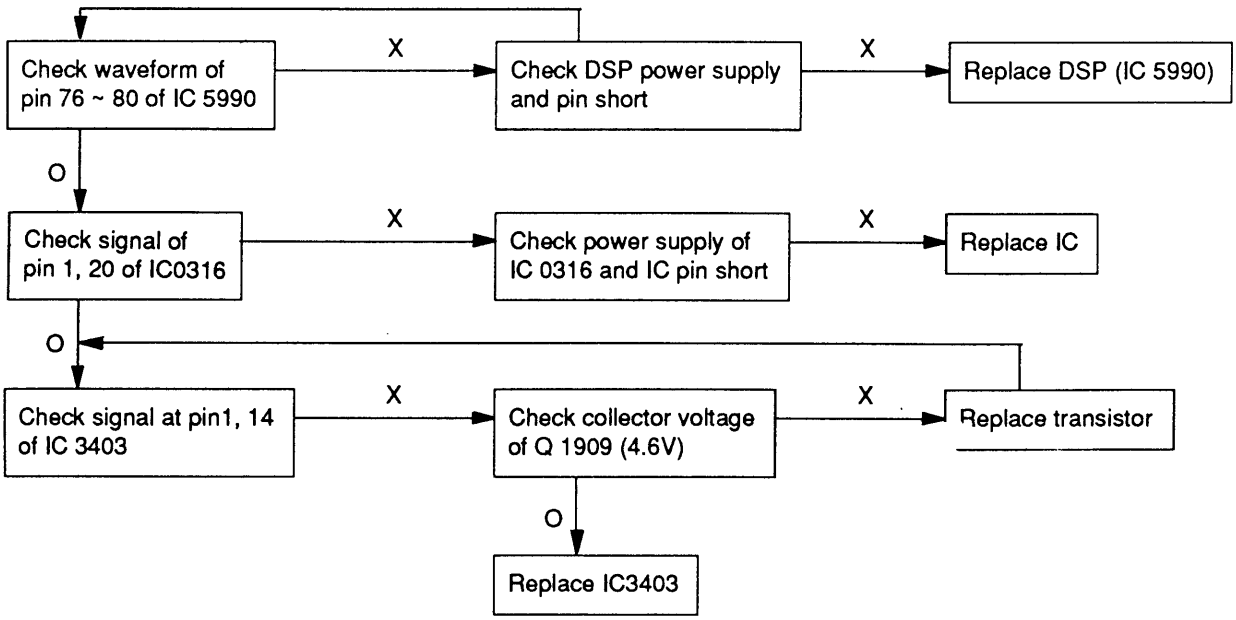
3) Display Not Working



4) Disc Not Rotating



5) No Audio



■ ADJUSTMENT

1. TUNER SECTION

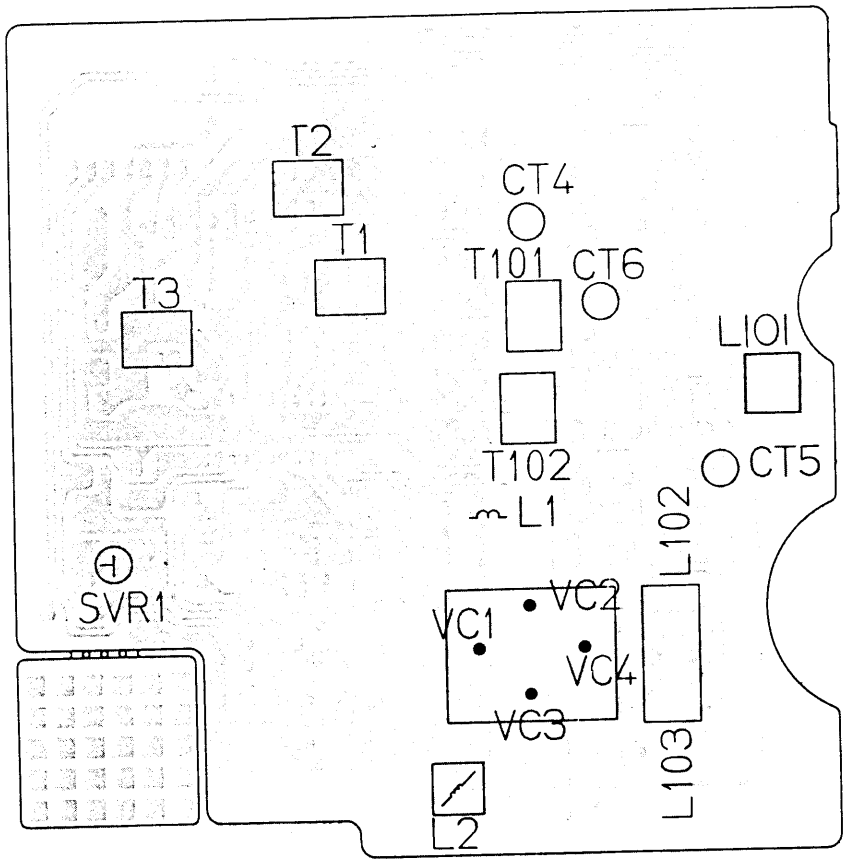
1) MEASURING INSTRUMENTS REQUIRED

(1) AM Standard Signal Generator (S.S.G)
: 100KHz ~ 35MHz, 400Hz, 30% MOD.
(2) FM Standard Signal Generator (S.S.G)
: Output impedance 75 Ω , 400Hz, 22.5KHz DEV.
(3) IF Generator
FM: 10.7MHz
AM(MW)/LW/SW: 455 or 465KHz
(4) Oscilloscope
(5) VTVM
(6) Frequency counter
(7) Loop antenna
(8) Dummy load (4 Ω)

2) IMPORTANTS

(1) Check the power source voltage.
(2) Select desired Band and Function.
(3) Set Tone Control at mid position.
(4) Modulate AM to 30% amplitude with 400Hz signal and FM to 22.5KHz deviation with 400Hz signal.
(5) Set Volume Control to approximately 50mW, 4 Ω

3) LOCATION OF ADJUSTMENT POINT : TUNER PCB (PARTS SIDE)



T1	:	FM IF ADJ.
T2	:	AM(MW)/LW/SW IF ADJ.
T3	:	FM detector coil
T101	:	SW low coverage ADJ. (SW)
	:	MW low coverage ADJ. (LW)
T102	:	AM low coverage ADJ. (2-Band/SW)
	:	LW low coverage ADJ. (LW)
L1	:	FM low tracking ADJ.
L2	:	FM low coverage ADJ.
L101	:	SW low tracking ADJ. (SW)
L103	:	MW Low tracking ADJ. (LW)

L102	:	AM low tracking ADJ. (2-Band/SW)
	:	LW low tracking ADJ. (LW)
VC1	:	FM high coverage ADJ.
VC2	:	FM high tracking ADJ.
VC3	:	AM(MW) high coverage ADJ.
VC4	:	AM(MW) high tracking ADJ.
CT4	:	SW high coverage ADJ. (SW)
CT5	:	LW high tracking ADJ. (LW)
CT6	:	LW high coverage ADJ. (LW)
SVR1	:	FM separation ADJ.

4) ADJUSTMENT PROCEDURE

(1) FM ADJUSTMENT

ITEM	CONNECTION	STEP	S.S.G FREQUENCY	RADIO DIAL SETTING	ADJUSTMENT POINT	REMARK
IF Adjustment	Fig. 1	1	10.7MHz	Tune to the Lowest frequency	T1(ORG) FM IFT T3 (PINK) FM DET	Maximum gain and symmetrical "S" curve.
		2	Repeat step 1 until no further improvement can be made.			
Frequency Coverage Adjustment	Fig. 2	3	87.3MHz	Tune to the Lowest frequency	L2 FM OSC coil	Best resonating point of SSG.
		4	108.5MHz	Tune to the highest frequency	VC1 OSC trimmer (VARICON)	Best resonating point of SSG.
		5	Repeat steps 3 and 4 several times.			
Tracking Adjustment	Fig. 2	6	90MHz	90MHz	L1 FM RF coil	Maximum Output.
		7	106MHz	106MHz	VC2 ANT trimmer (VARICON)	Maximum Output.
		8	Repeat steps 6 and 7 to obtain suitable sensitivity at 90MHz and 106MHz.			
Stereo Separation Adjustment	Connect Stereo Generator to S.S.G additionally in Fig. 2.	9	98MHz	98MHz	SVR1	Best separation.

FM IF OUTPUT : IC101 (TA8167N) PIN NO. 19

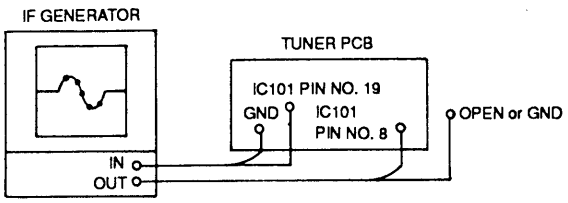


Fig. 1

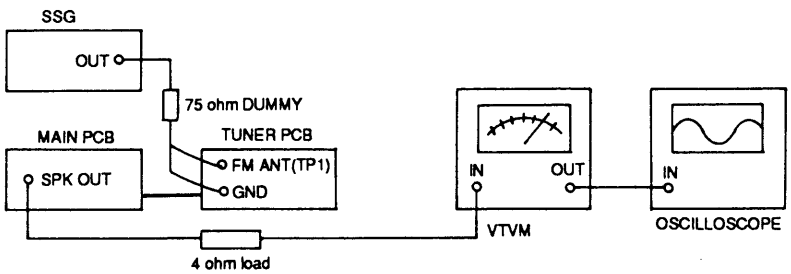


Fig. 2

(2) 2 BAND (FM/AM) AM ADJUSTMENT

ITEM	CONNECTION	STEP	S.S.G FREQUENCY	RADIO DIAL SETTING	ADJUSTMENT POINT	REMARK
IF Adjustment	Connect FM/AM IF generator to loop ANT. Couple the AM ANT coil close to loop ANT and take out the signal from AM IF out point. (IC101 pin No 19) (See Fig. 3)	1	455KHz (465KHz)	Tune to the Lowest frequency	AM IFT T2 (WHT)	Maximum output and best "V" curve.
		2	Repeat 1 until no futher improvement can be made.			
AM Coverage Adjustment	Fig. 4	3	515KHz	Tune to the Lowest frequency	AM OSC coil (RED) T102	Best resonating point of SSG.
		4	1650KHz	Tune to the highest frequency	AM OSC trimmer VC3 (VARICON)	Best resonating point of SSG.
		5	Repeat steps 3 and 4 several times.			
AM Tracking Adjustment	Fig. 4	6	600KHz	600KHz	AM ANT coil L102	Maximum output.
		7	1400KHz	1400KHz	AM ANT trimmer (VC4) (VARICON)	Maximum output.
		8	Repeat steps 6 and 7 to obtain suitable sensitivity at 600KHz and 1400KHz.			

AM IF OUTPUT: IC 101 (TA8167N) PIN NO. 19.

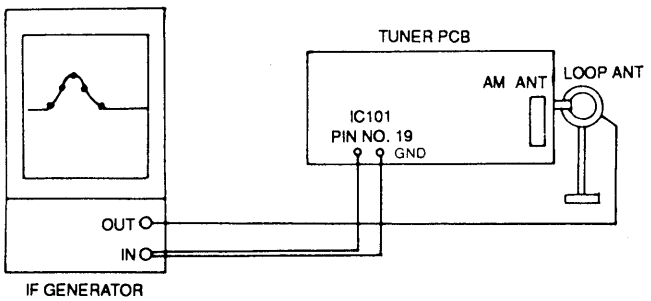


Fig. 3

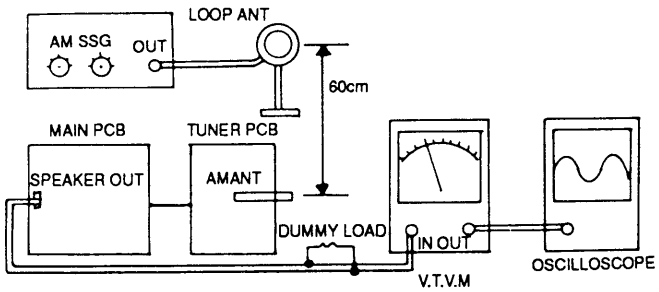


Fig. 4

(3) 3 BAND (FM/SW/AM) AM/SW ADJUSTMENTS

ITEM	CONNECTION	STEP	S.S.G FREQUENCY	RADIO DIAL SETTING	ADJUSTMENT POINT	REMARK
IF Adjustment	IF is same as 2 band's.					
AM Coverage Adjustment	Same as 2 band's.					
AM Tracking Adjustment	Same as 2 band's.					
SW Frequency Coverage Adjustment	Connect AM(SW) signal generator to SW ANT terminal (TP1) thru SW dummy ANT and speaker output to VTVM across 4 ohm load. (see Fig, 5 Fig. 6)	1	5.7MHz	Tune to the Lowest frequency	SW OSC COIL T101	Best resonating point of SSG.
		2	18.5MHz	Tune to the highest frequency	SW OSC trimmer CT4	Best resonating point of SSG.
		3	Repeat steps 1 and 2 several times.			
SW Tracking Adjustment	Fig. 5, Fig. 6	4	7MHz	7MHz	SW ANT coil L101	Maximum output.

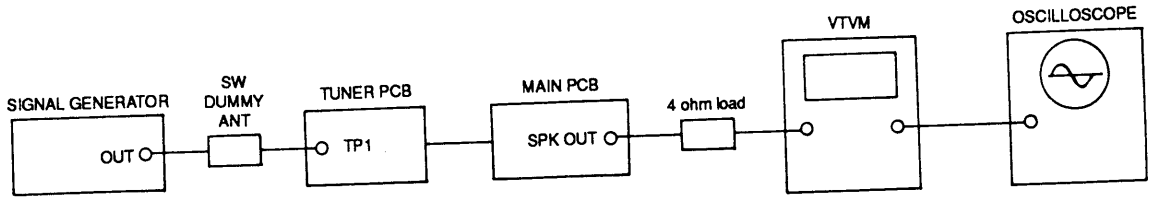


Fig. 5

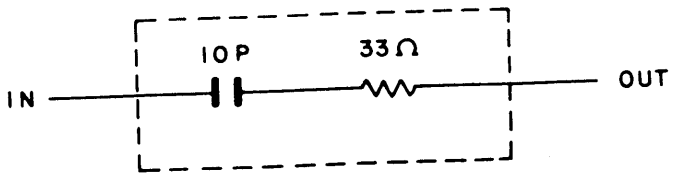


Fig. 6 SW DUMMY ANT

(4) 3 BAND (FM/MW/LW) MW(AM)/LW ADJUSTMENTS

ITEM	CONNECTION	STEP	S.S.G FREQUENCY	RADIO DIAL SETTING	ADJUSTMENT POINT	REMARK
IF Adjustment	IF is the same as 2 band's.					
MW(AM) Frequency Coverage Adjustment	Fig. 4	1	515KHz	Tune to the lowest frequency	MW OSC coil T101 (RED)	Best resonating point of SSG.
		2	1650KHz	Tune to the highest frequency	MW OSC trimmer VC3	Best resonating point of SSG.
		3	Repeat steps 1 and 2 several times.			
MW(AM) Tracking Adjustment	Same as 2 band's (see Fig. 4)	4	600KHz	600KHz	MW ANT coil L103	Maximum output.
		5	1400KHz	1400KHz	MW ANT trimmer VC4(VARICON)	Maximum output.
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 600KHz and 1400KHz.			
LW Frequency Coverage Adjustment	Fig. 4	7	145KHz	Tune to the lowest frequency	LW OSC coil T102(BRN)	Best resonating point of SSG.
		8	295KHz	Tune to the highest frequency	LW OSC trimmer CT6	Best resonating point of SSG.
		9	Repeat steps 7 and 8 several times.			
LW Tracking Adjustment	Fig. 4	10	160KHz	160KHz	LW ANT coil L102	Maximum output.
		11	240KHz	240KHz	LW ANT trimmer CT5	Maximum output.
		12	Repeat steps 10 and 11 to obtain suitable sensitivity at 160KHz and 240KHz.			

2. TAPE SECTION

1) MEASURING INSTRUMENTS REQUIRED

(1) Oscilloscope
(2) VTVM
(3) Frequency counter
(4) Test tape
① MTT-111 (or equivalent) : 3KHz signal is recorded. → Tape Speed Adjustment.
② MTT-113CN (or equivalent) : 8KHz signal is recorded. → Head Azimuth Adjustment

2) ADJUSTMENT PROCEDURE

(1) HEAD AZIMUTH ADJUSTMENT
① Connect the equipments as shown in the Fig. 7.
② Insert a test tape (8KHz : MTT-113CN) into deck.
③ Press PLAY (►) and set VOLUME at approximately 50mW (4 Ω).
④ Adjust the azimuth adjustment screw for the maximum and balanced channel output (Fig. 8).
⑤ Secure the adjustment screw with glue after adjustment is complete.

(2) RECORDING BIAS ADJUSTMENT
① Connect C302 of Main PCB to the Frequency Counter. (Fig. 9)
② Press RECORD (●) and set TAPE SELECTOR to "NORMAL (▮)".
③ Adjust T301 so that the Frequency Counter reads 50KHz.

(3) TAPE SPPED ADJUSTMENT
① Connect the equipments as shown in the Fig. 7.
② Insert a test tape (3KHz : MTT-111) into deck.
③ Adjust adjustment hole of motor so that the Frequency Counter reads 3KHz. (Fig. 10)

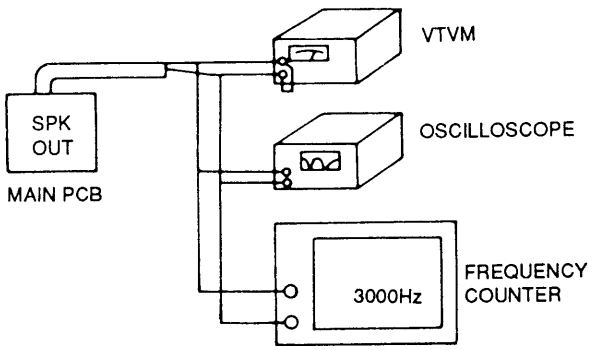


Fig. 7

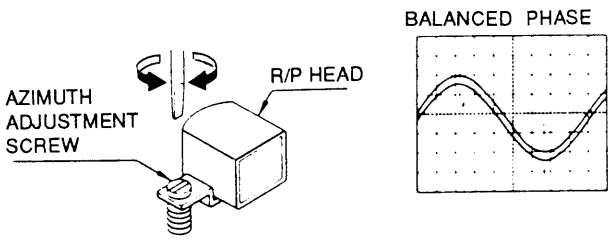


Fig. 8

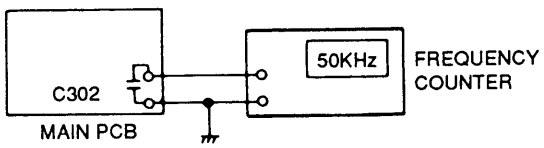


Fig. 9

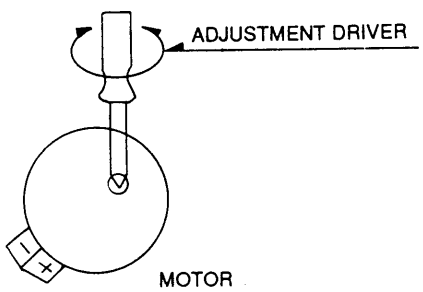


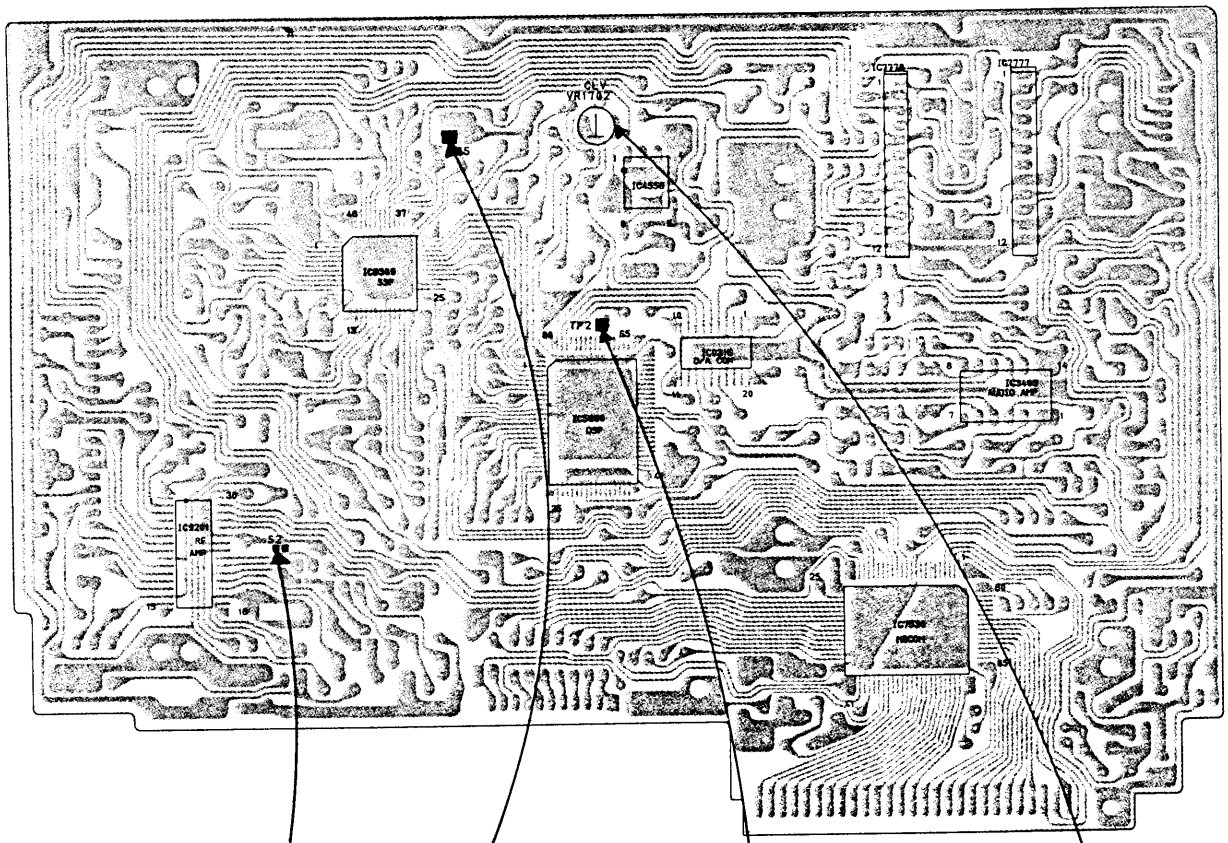
Fig. 10

3. CD SECTION

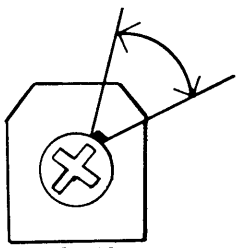
1) CLV ADJUSTMENT

10 : 1 damping probe.

A. Turn power on without loading a disc.
B. Connect S2 (Asymmetry ; short).
C. Connect TP5 to GND, TP2 to positive terminal on the Frequency Counter.
D. Adjust VR 1702 so that the Frequency Counter reads 4.460MHz ± (0.01MHz).
E. Disconnect S2.



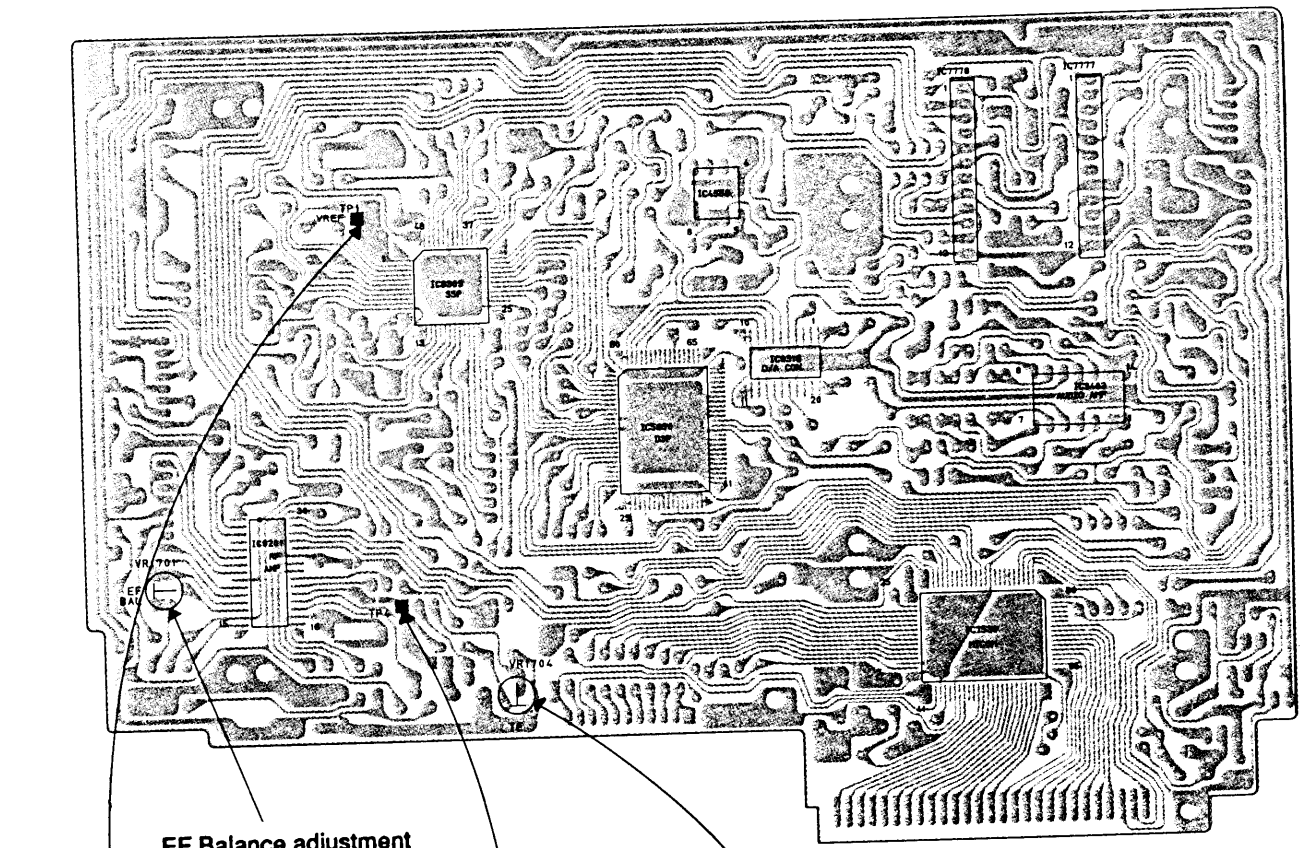
Asymmetry point GND port of FREQ. COUNTER Positive port of FREQ. COUNTER CLV adjustment

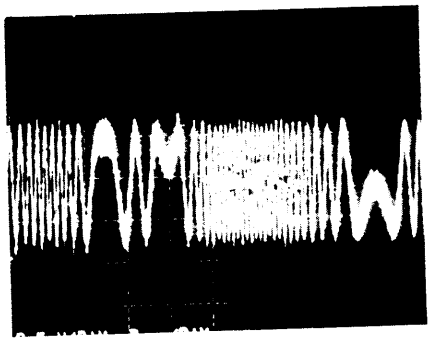


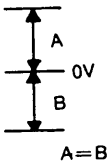
VR1702

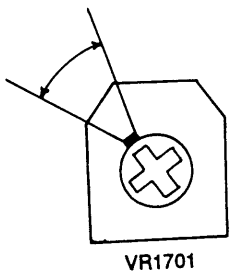
2) EF BALANCE ADJUSTMENT (Power On)

A. Set Oscilloscope Time/Div to 2mS.
B. Set Oscilloscope Volt/Div to 0.5V.
C. Set Oscilloscope range to GND.
D. Set Oscilloscope range to DC after the waveform is adjusted at mid-position on the oscilloscope.
E. Connect TP1 (Vref) to GND and TP4 (T.E) to positive terminal on the oscilloscope.
F. Press PLAY with loading a disc.
G. Turn VR1704 all the way counter clockwise. (Sound comes out abnormally and discontinuously)
H. Adjust VR1701 so that the waveform is equally symmetrical above and below (A = B).
I. Turn VR1704 to play sound normally. (Neary mid-position of VR1704).



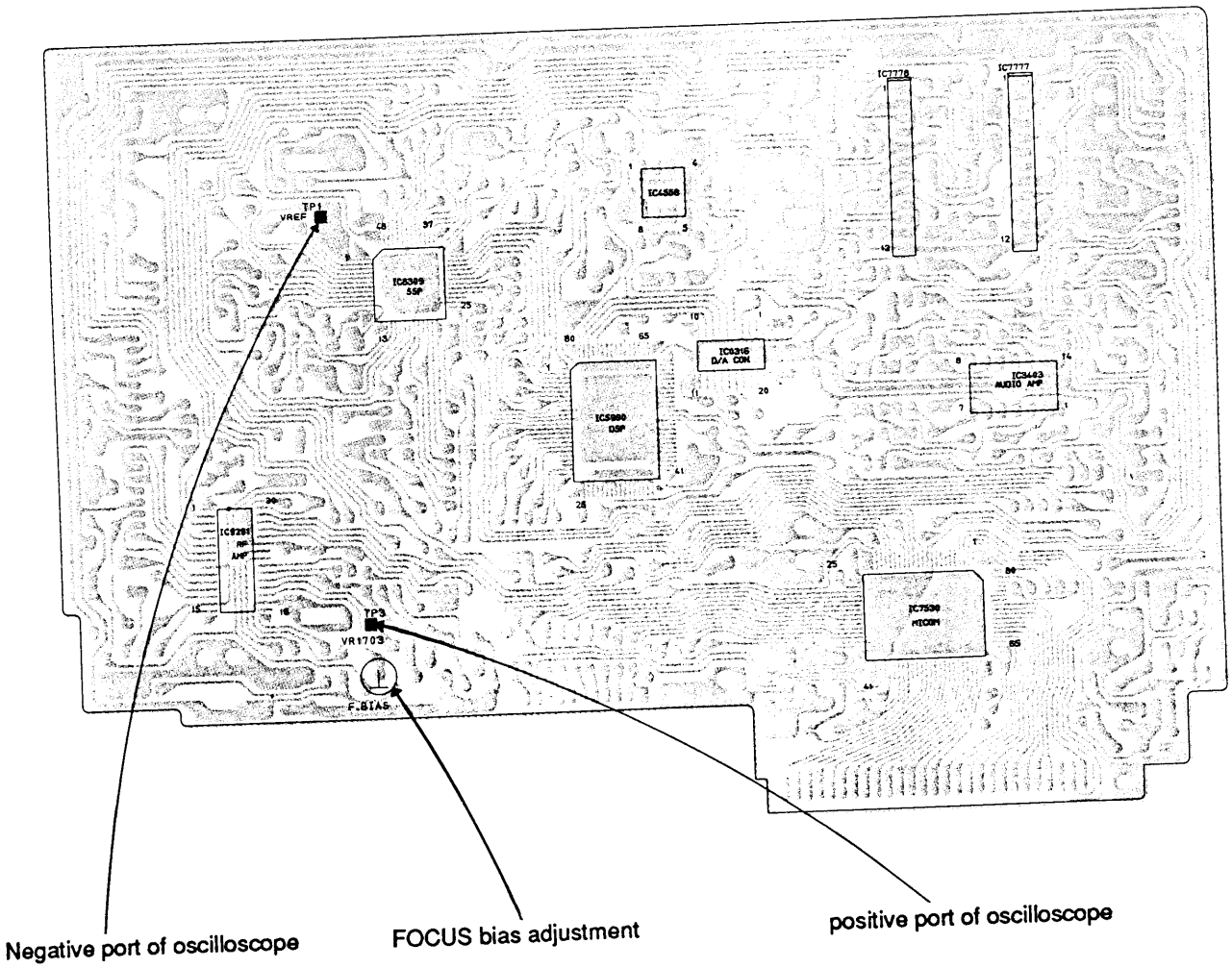


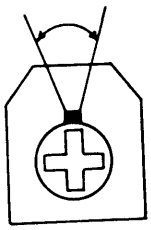




3) FOCUS BIAS ADJUSTMENT

A. Turn power on without loading a disc.
B. Set Oscilloscope Vol/Div to DC200mV.
C. Connect TP1 (Vref) to GND and TP3 (F.E) to positive terminal on the oscilloscope.
D. Adjust VR1703 so that the voltage is 200mV DC on the oscilloscope.

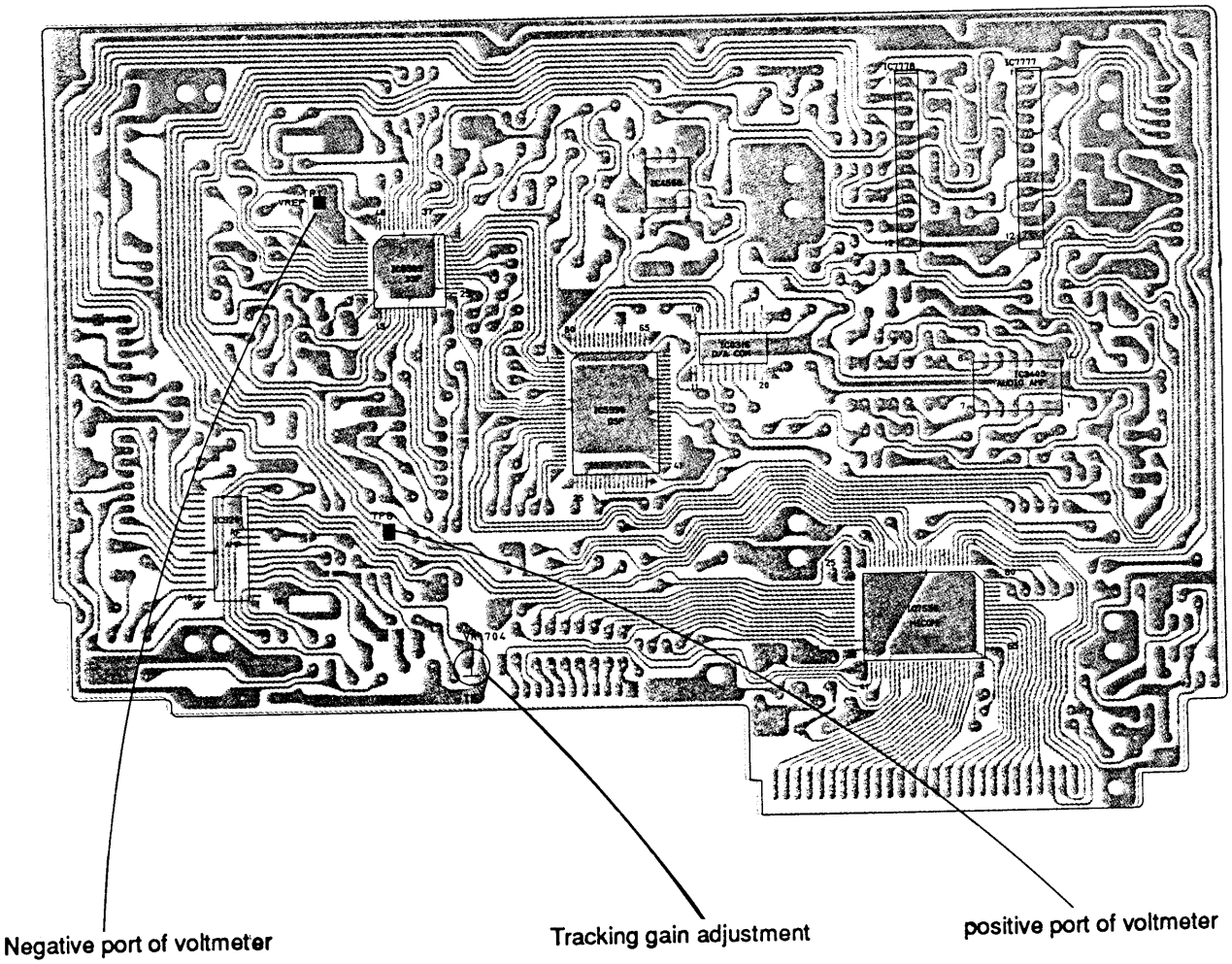


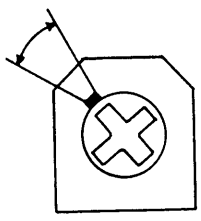


VR1703

4) TRACKING GAIN ADJUSTMENT (Power On)

A. Connect TP1 (Vref) to GND and TP6 (T.E) to positive terminal on the Volt Meter.
B. Press PLAY with loading a disc.
C. Adjust VR1704 so that the Volt Meter reads 31 ± 0.5mV AC.

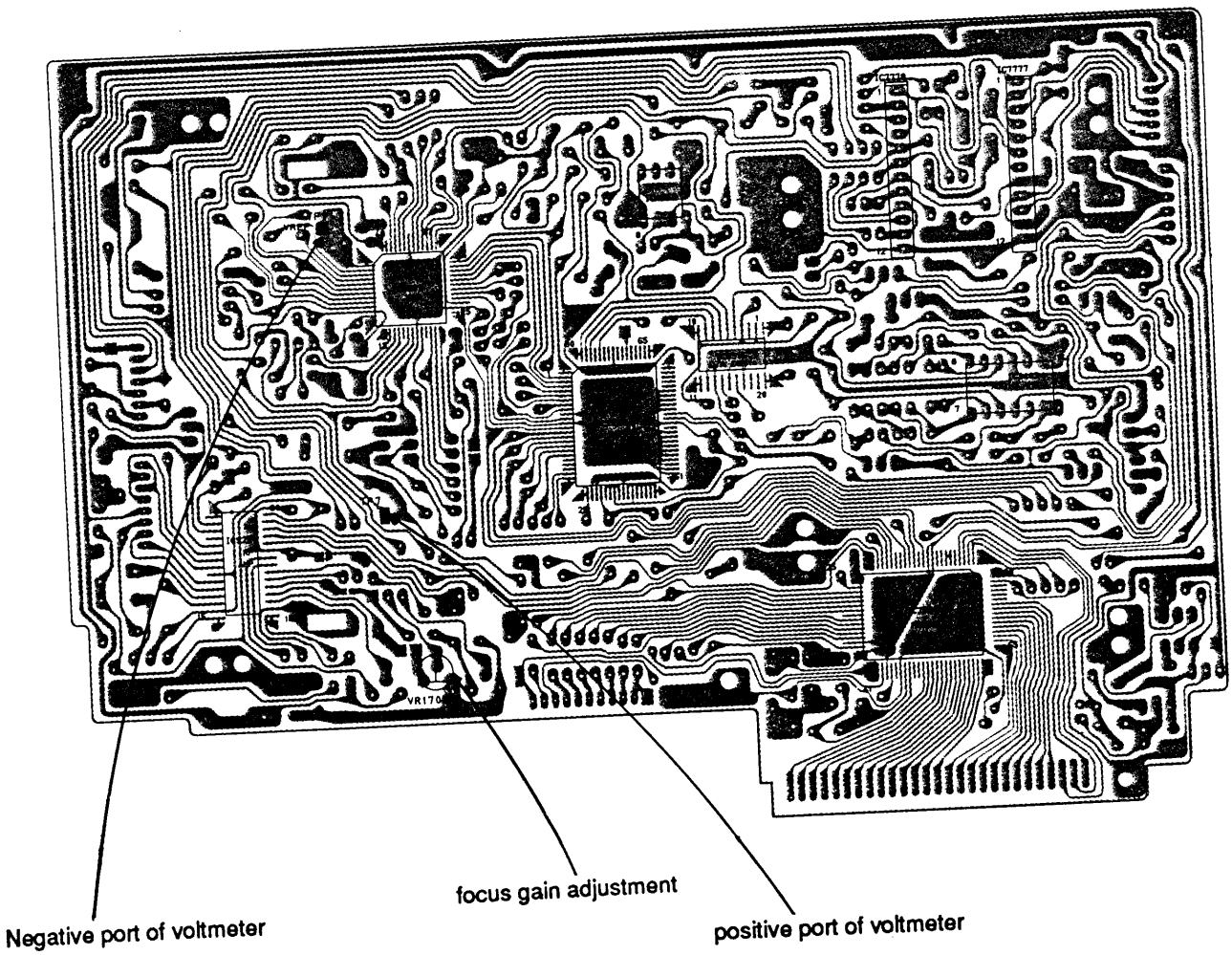


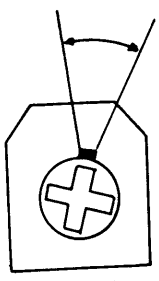


VR1704

5) FOCUS GAIN ADJUSTMENT (Power ON)

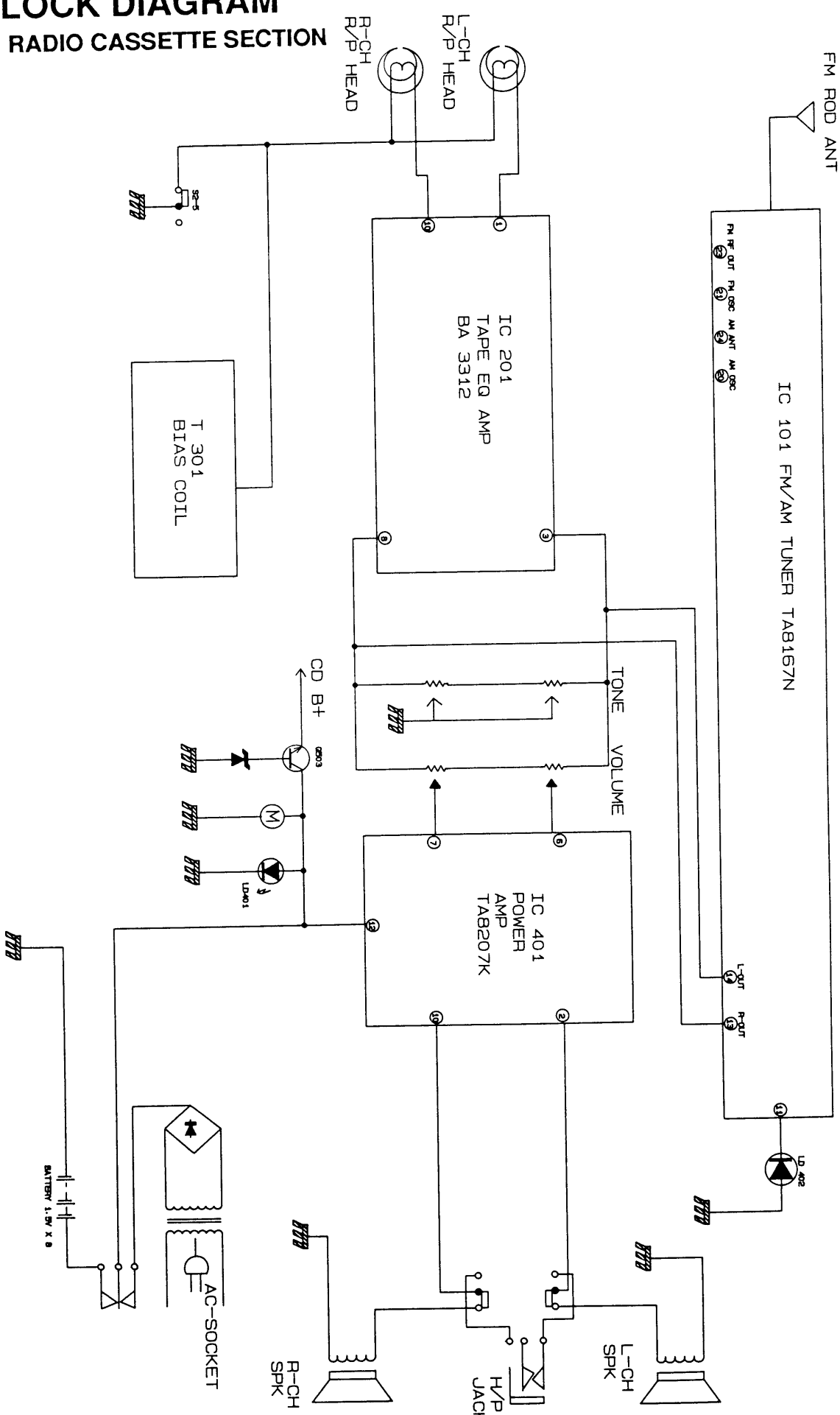
A. Connect TP1 (Vref) to GND and TP7 (F.E) to positive terminal on the Volt Meter.
B. Press PLAY with loading a disc.
C. Adjust VR 1705 so that Volt Meter reads 19 ± 0.5mV AC.




VR1705

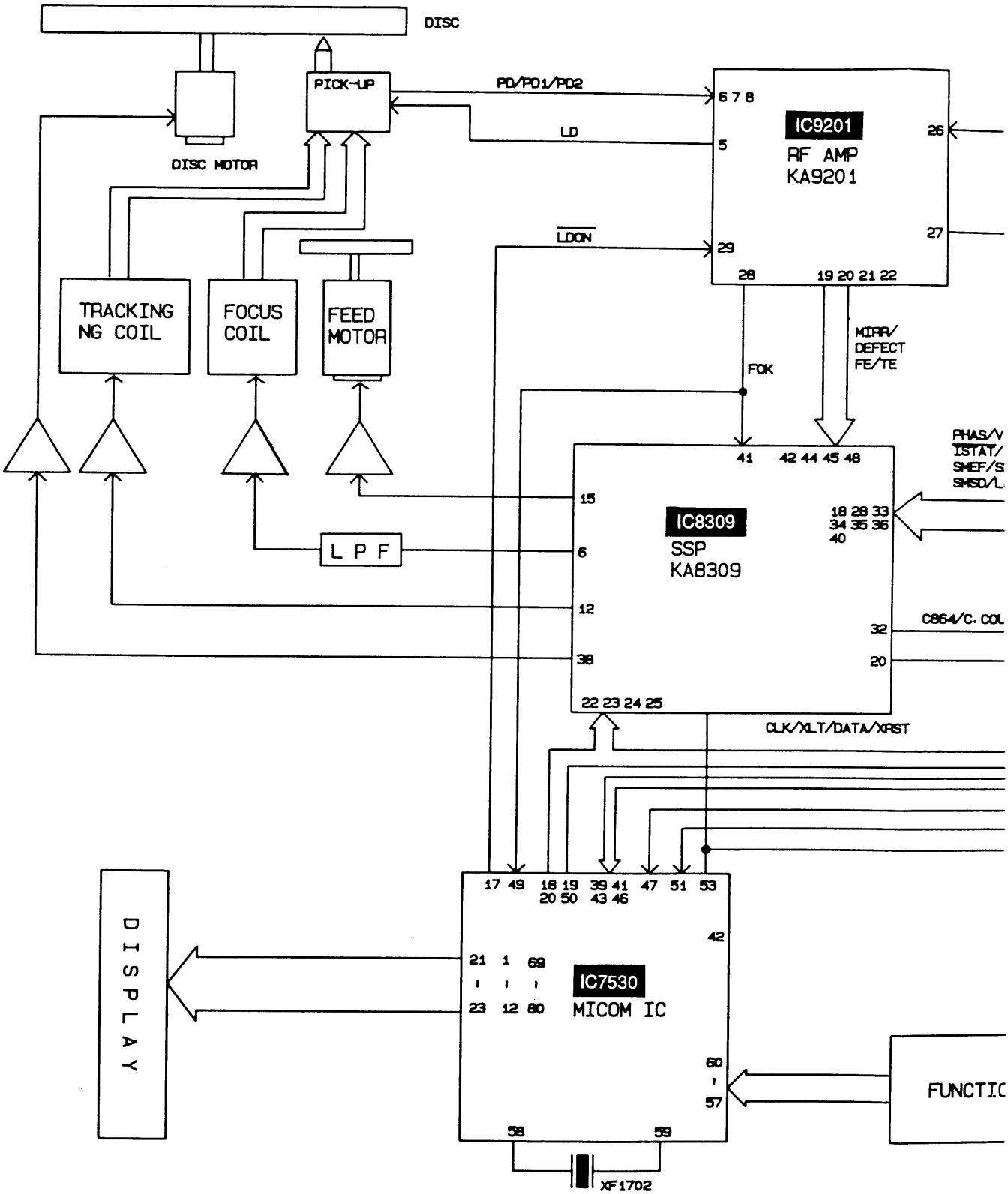
■ BLOCK DIAGRAM

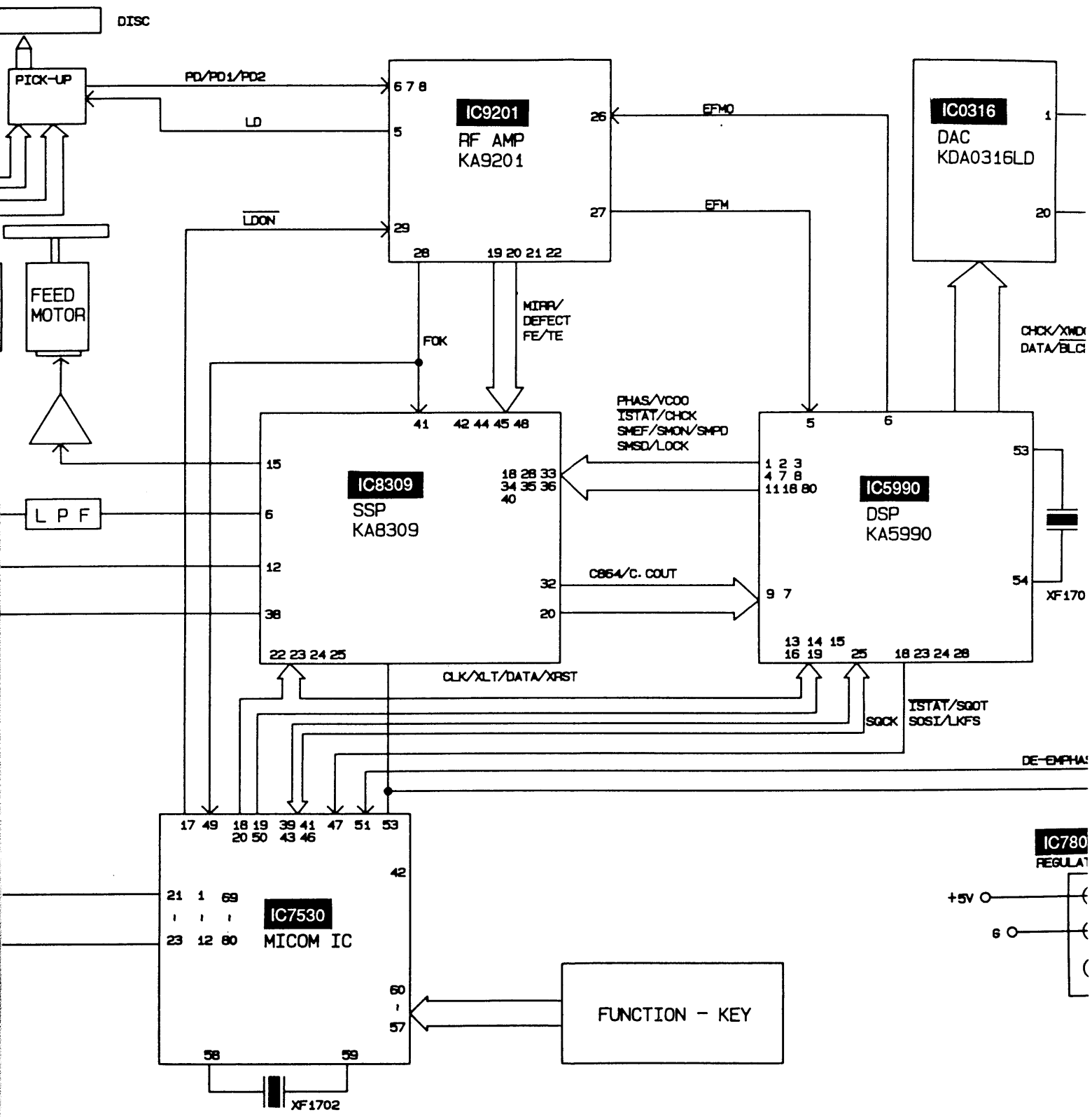
1. RADIO CASSETTE SECTION



2. CD SECTION

BLOCK DIAGRAM




DISC
PICK-UP
PD/PD1/PD2
LD
LDON
FEED MOTOR
L P F
IC9201
RF AMP
KA9201
6 7 8
5
29
28
19 20 21 22
26
27
EFMO
EFM
FOK
MIRR/
DEFECT
FE/TE
IC0316
DAC
KDA0316LD
1
20
CHCK/XWD
DATA/BLC
IC8309
SSP
KA8309
41
42 44 45 48
15
6
12
38
18 28 33
34 35 36
40
22 23 24 25
PHAS/VCOO
ISTAT/CHCK
SMEF/SMON/SMPD
SMSD/LOCK
IC5990
DSP
KA5990
5
6
1 2 3
4 7 8
11 18 80
53
54
XF170
C864/C. COUT
32
20
9 7
13 14 15
16 19
25
18 23 24 28
CLK/XLT/DATA/XRST
ISTAT/SQOT
SQCK
SOSI/LKFS
DE-EMPHA
17 49
18 19
20 50
39 41
43 46
47
51
53
42
IC7530
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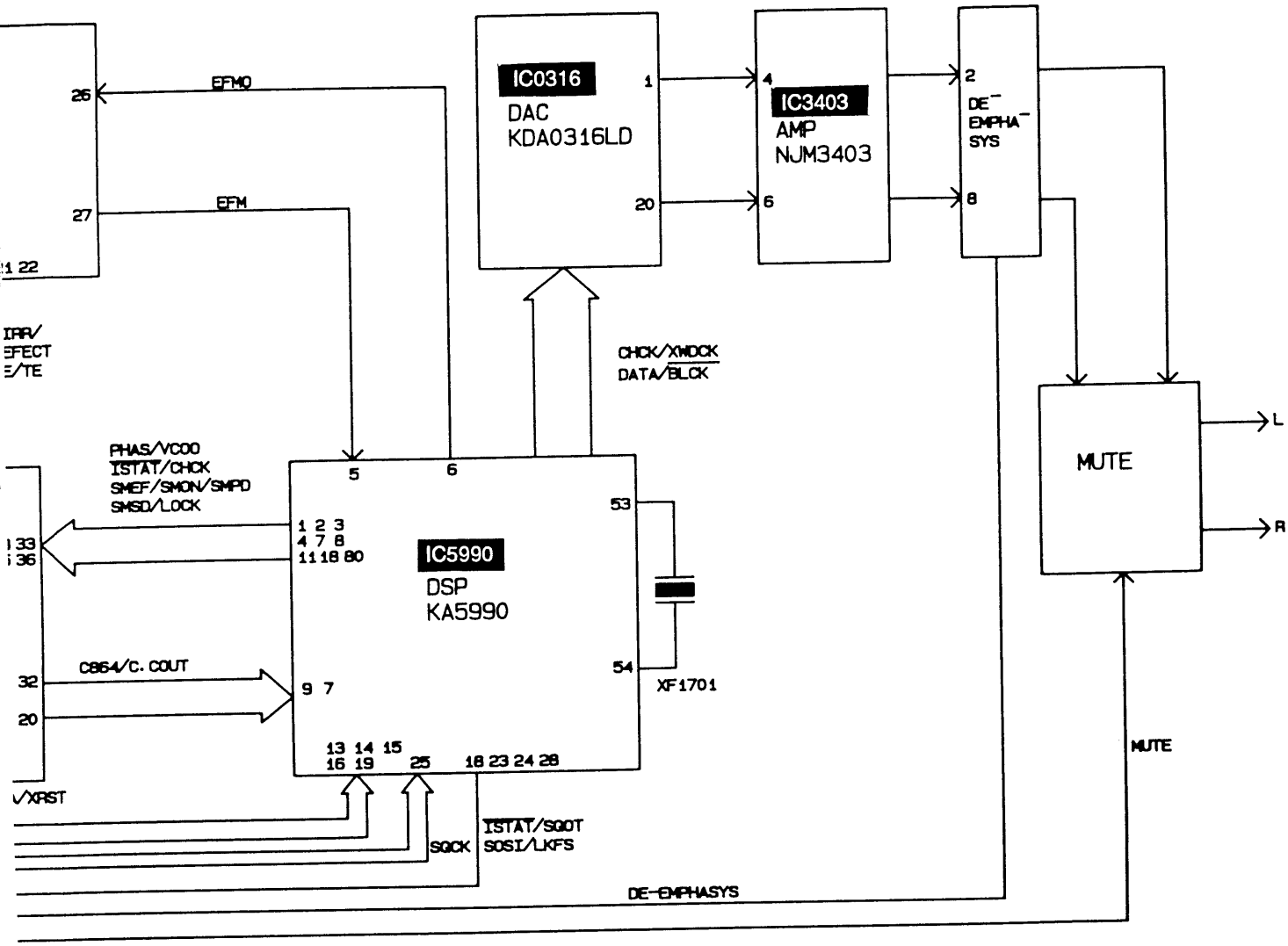
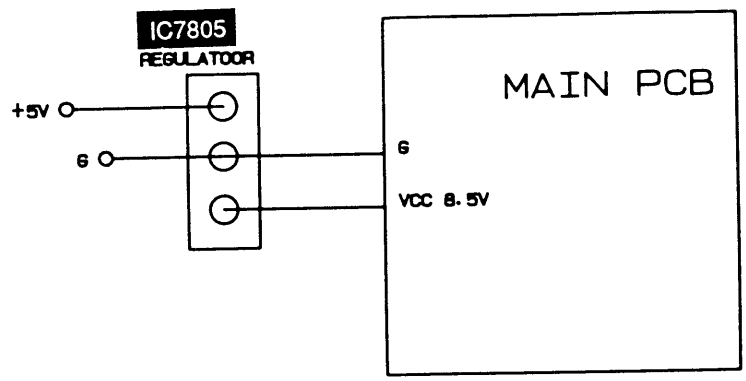
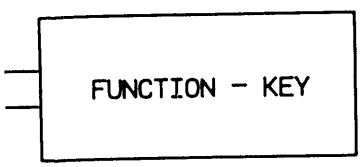
57
58
59
XF1702
FUNCTION - KEY
IC780
REGULA
+5V
6

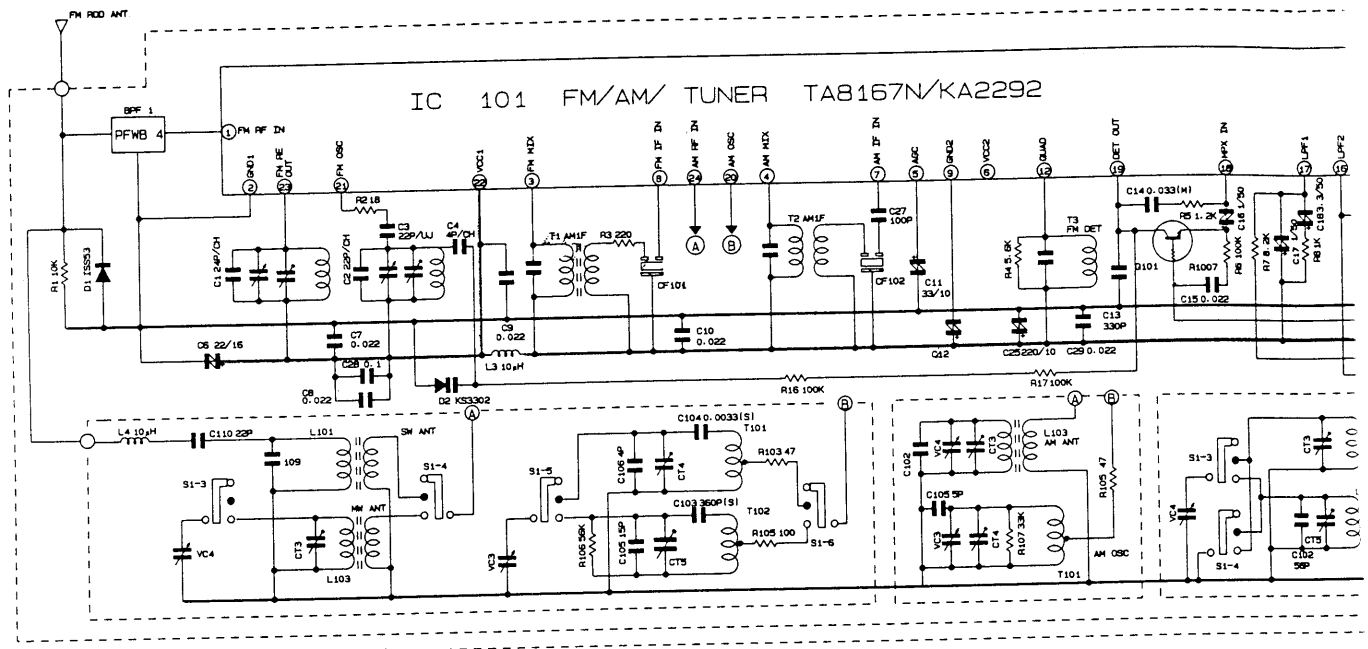

IC0316
DAC
KDA0316LD
IC3403
AMP
NJM3403
DE-EMPHA-SYS
MUTE
L
R
EFMO
EFM
CHCK/XWDCK
DATA/BLCK
PHAS/VCOO
ISTAT/CHCK
SMEF/SMON/SMPD
SMSD/LOCK
IC5990
DSP
KA5990
C864/C. COUT
XF1701
MUTE
ISTAT/SQOT
SOSI/LKFS
SQCK
DE-EMPHASYS

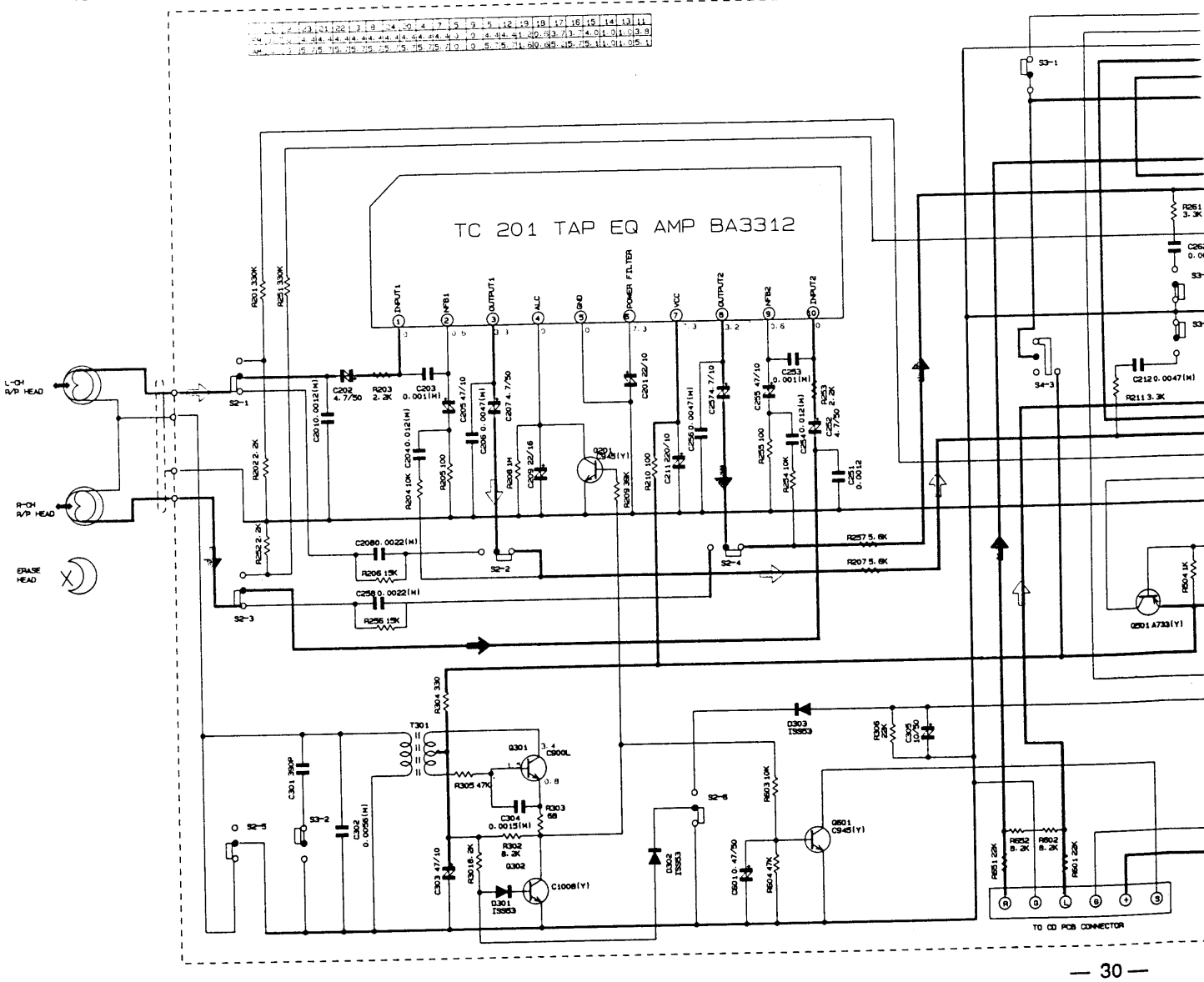

IC7805
REGULATOOR
+5V
6
MAIN PCB
6
VCC 8.5V


FUNCTION - KEY

■ SCHEMATIC DIAGRAM

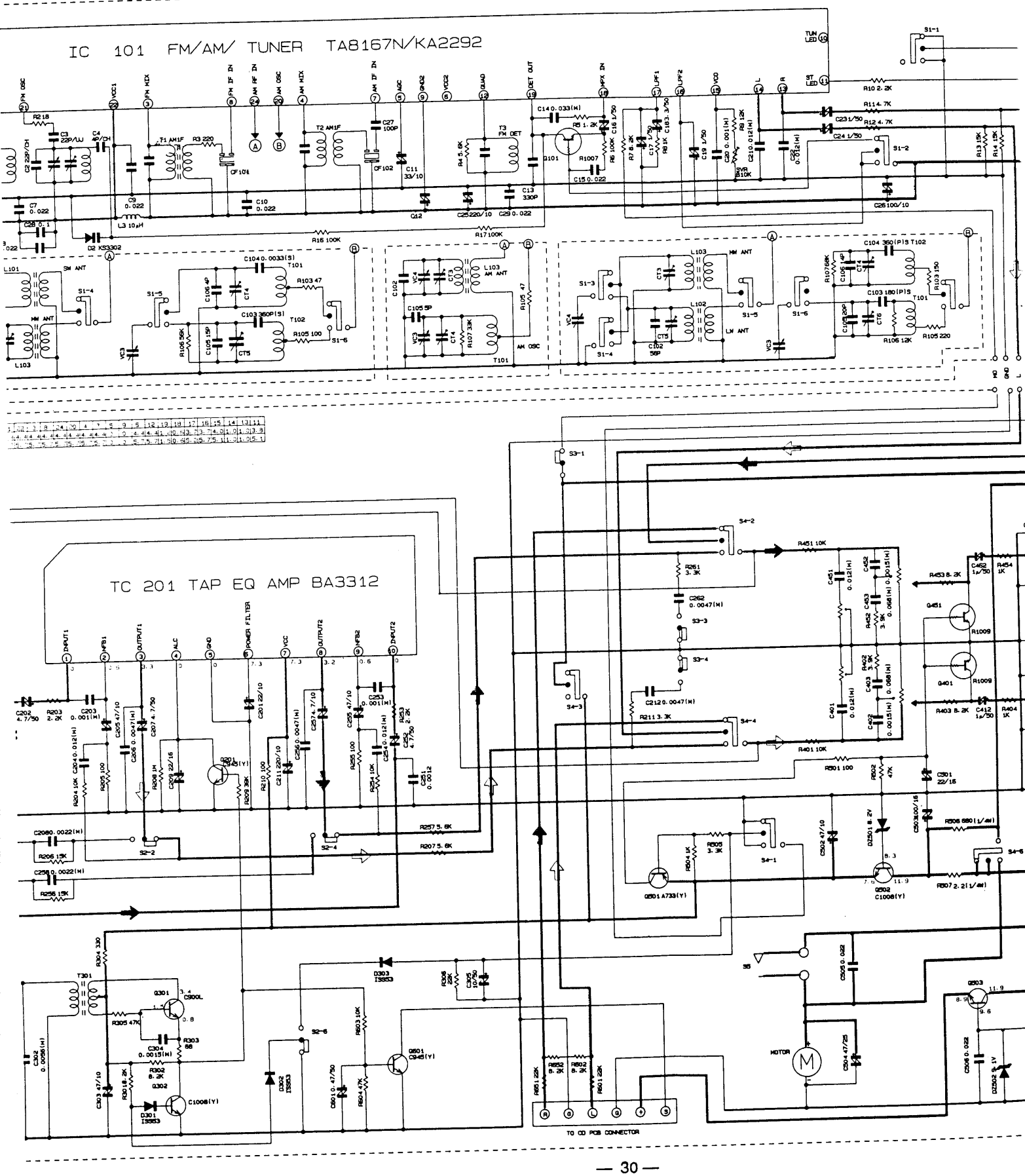
1. RADIO CASSETTE SECTION



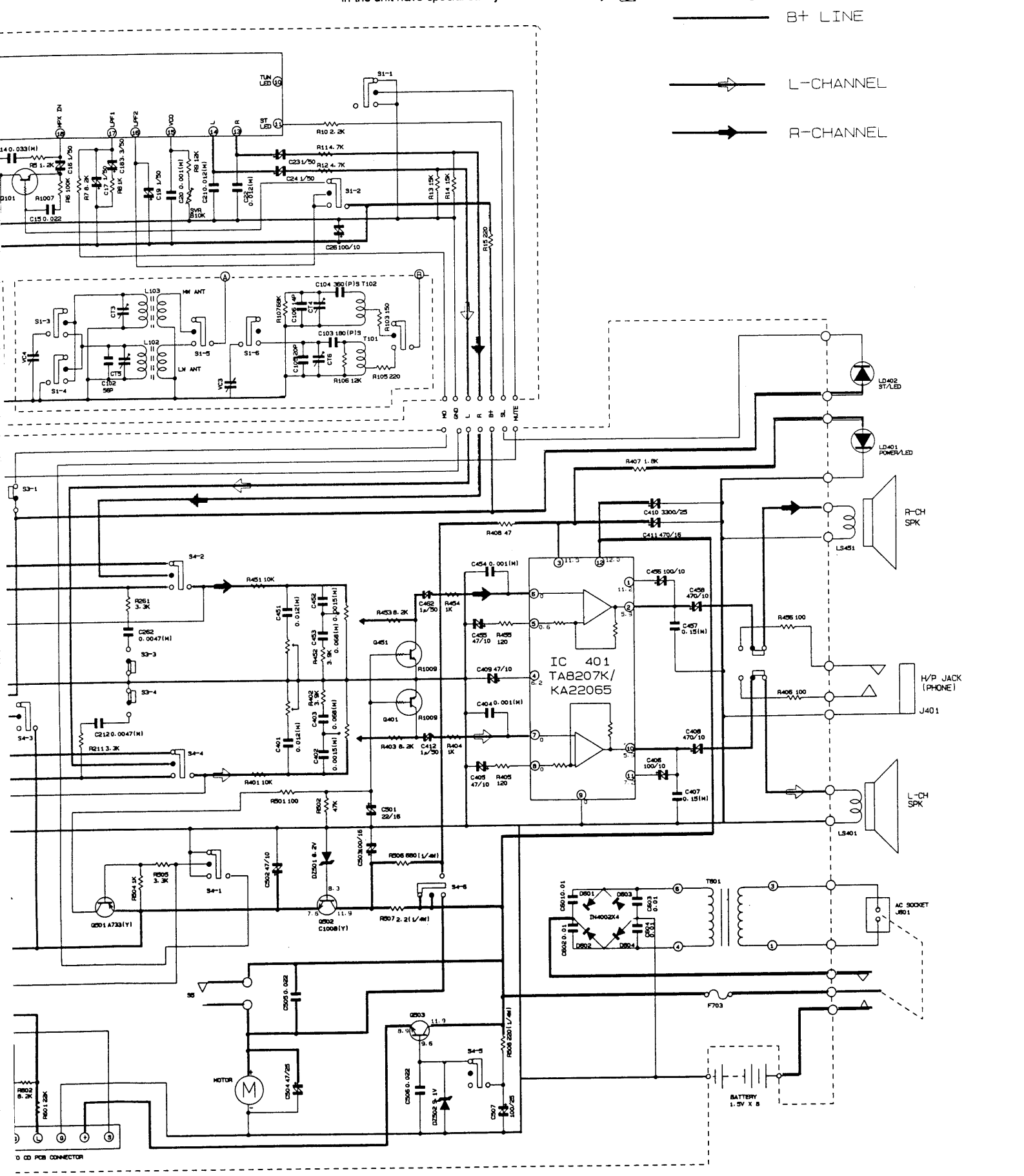


AGRAM
SECTION

1. All resistors are in ohm (
2. All capacitance values a
3. The schematic diagram
4. Be sure to use identical
   in the unit have special

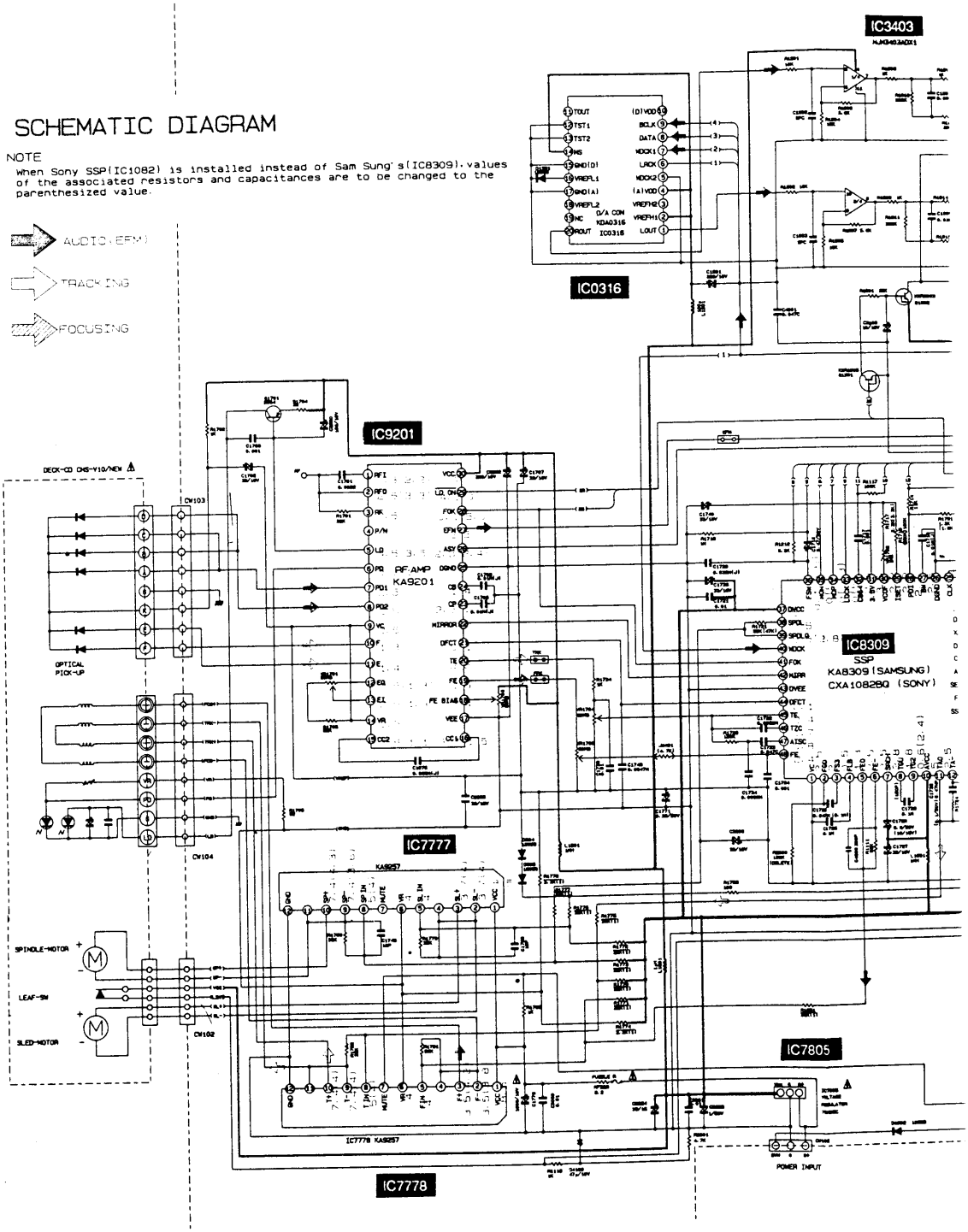


1. All resistors are in ohm (K = K ohm, M = M ohm) or, unless otherwise noted, wattage values (1/4, 1/8 W).
2. All capacitance values are indicated in μF, PF.
3. The schematic diagram is subject to change upon improvement without prior notice.
4. Be sure to use identical and standardized replacement parts, especially for critical parts in the unit since many parts in the unit have special safety features marked by ⚠ in the schematic diagram and parts list.

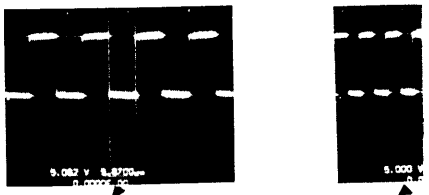


2. CD SECTION

1. All resistors are in ohm (K = K ohm, M = M ohm) or, unless otherwise noted, wattage values (1/4, 1/8 W).
2. All capacitance values are indicated in µF, PF.
3. The schematic diagram is subject to change upon improvement without prior notice.
4. Be sure to use identical and standardized replacement parts, especially for critical parts in the unit since many parts in the unit have special safety features marked by ⚠ in the schematic diagram and parts list.

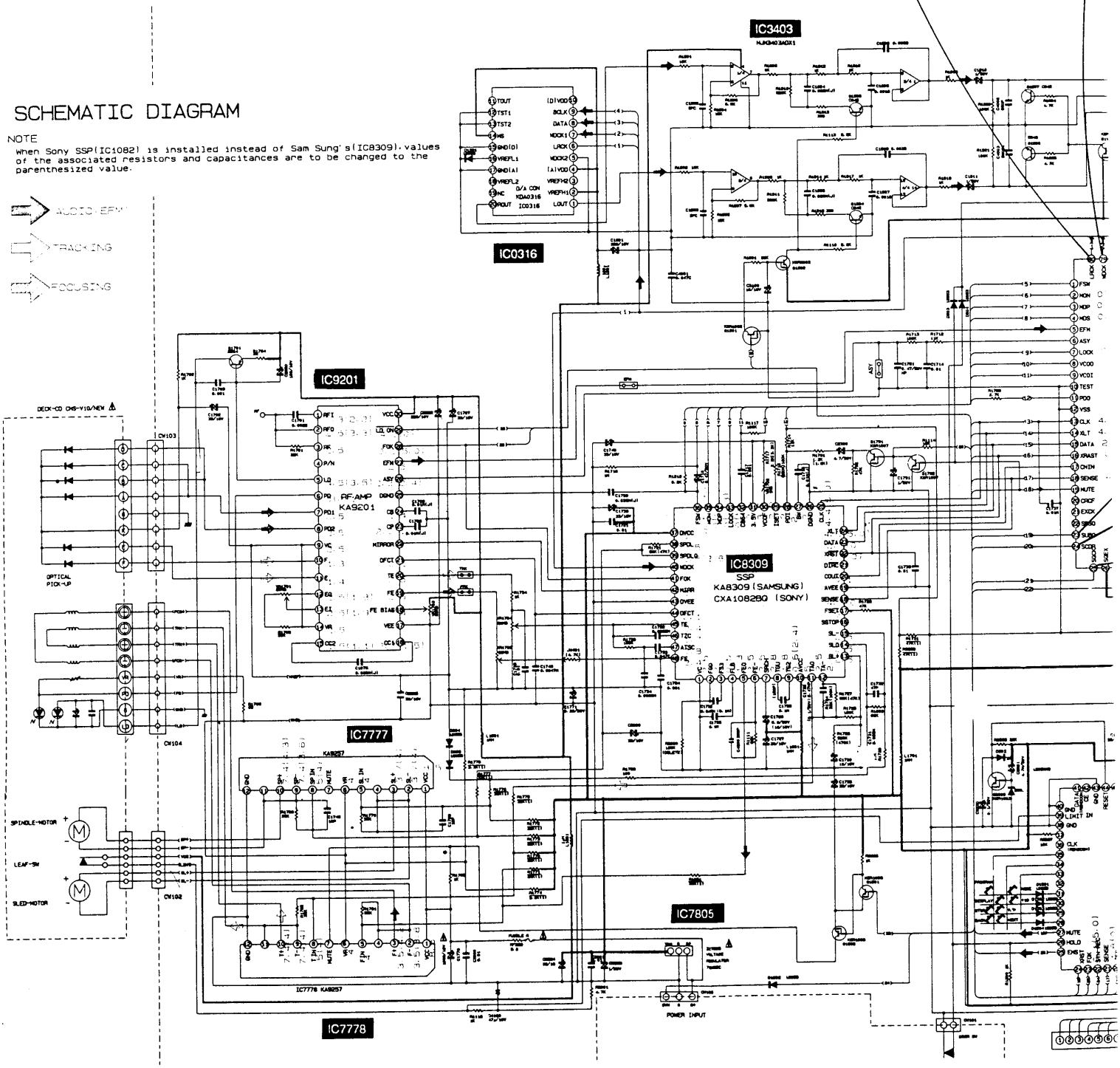


K ohm, M = M ohm) or, unless otherwise noted, wattage values (1/4, 1/8 W).
ndicated in μF, PF.
ubject to change upon improvement without prior notice.
l standardized replacement parts, especially for critical parts in the unit since many parts in the unit have special
⚠ in the schematic diagram and parts list.



SCHEMATIC DIAGRAM

NOTE
When Sony SSP(IC1082) is installed instead of Sam Sung's(IC8309), values of the associated resistors and capacitances are to be changed to the parenthesized value.



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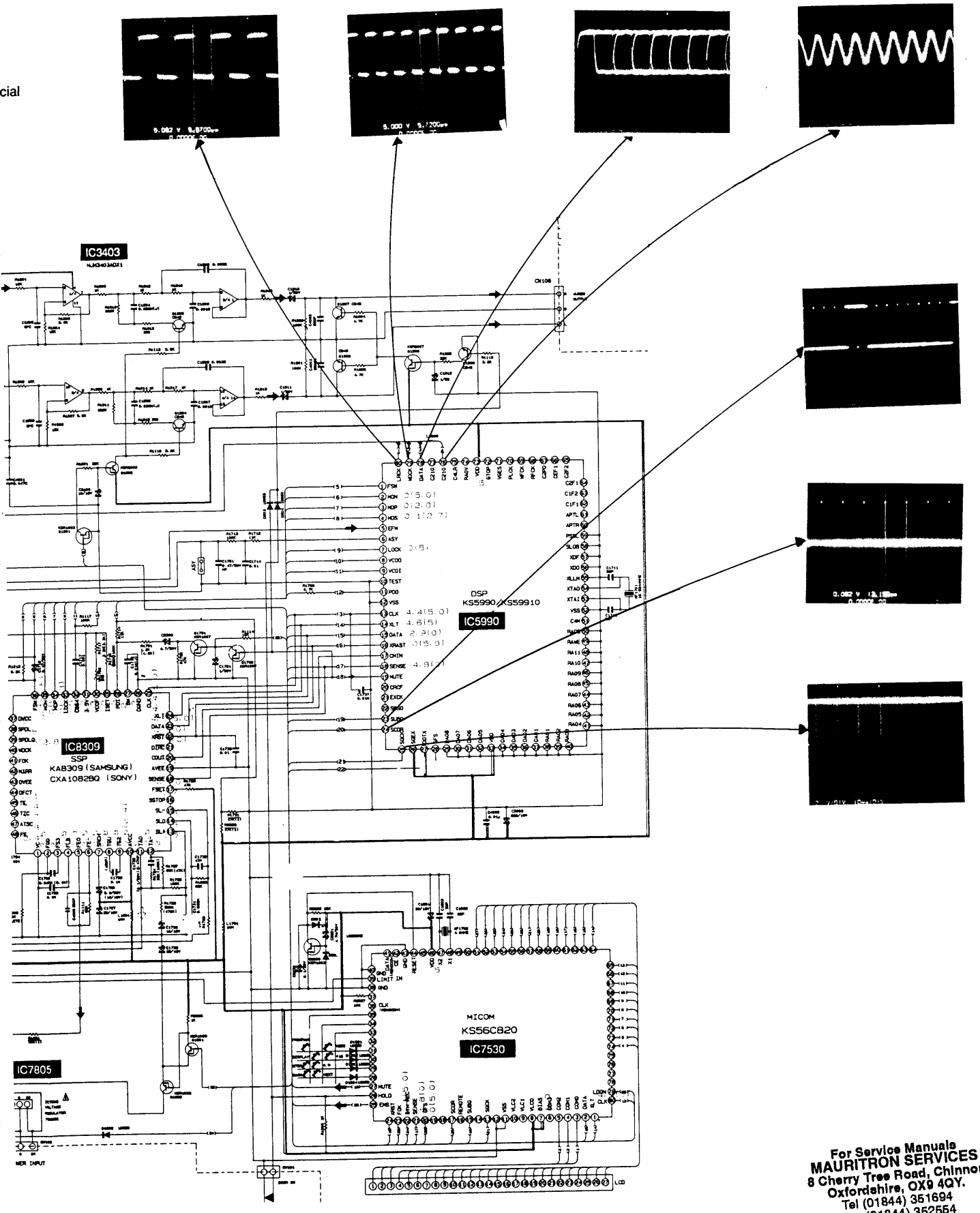
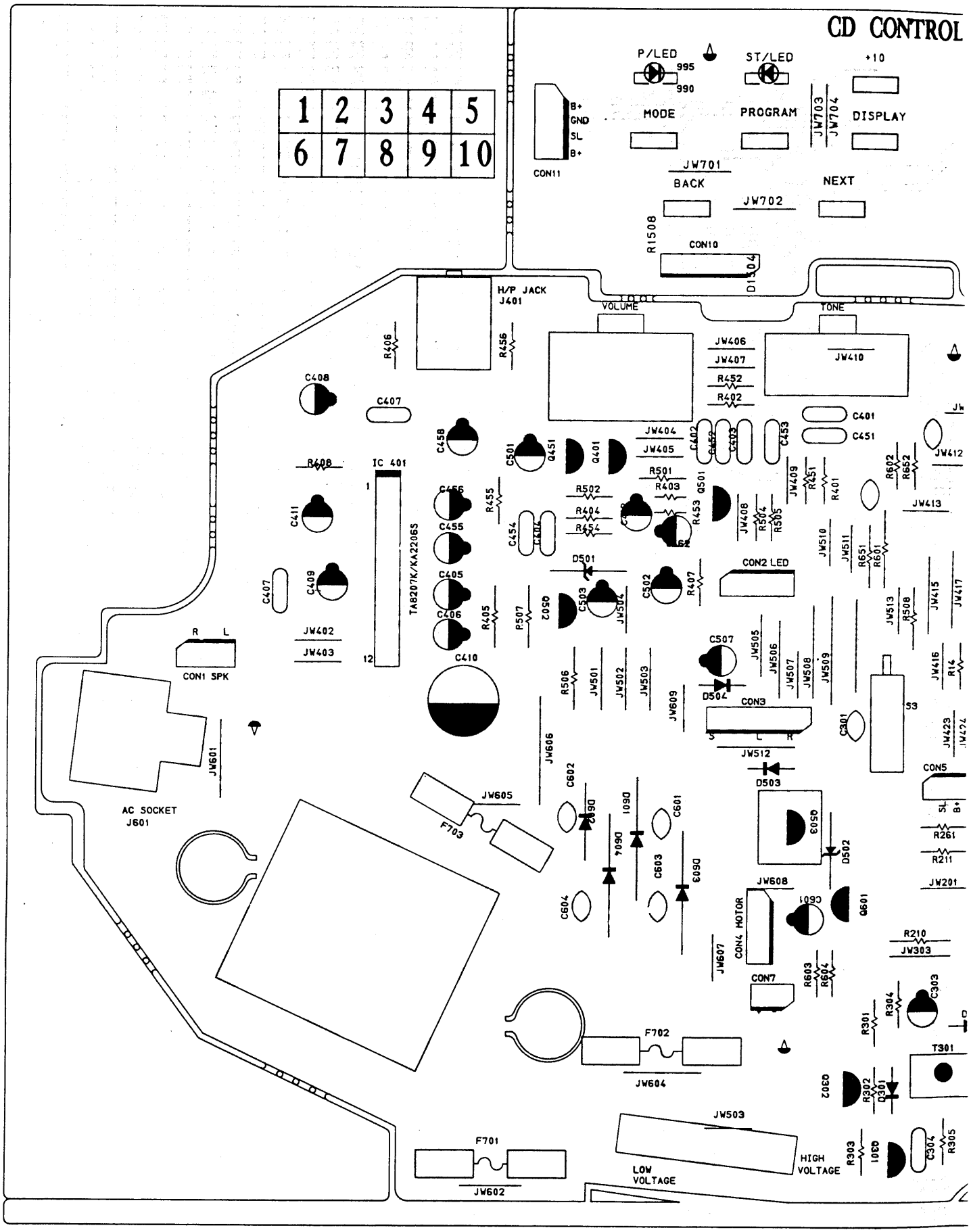


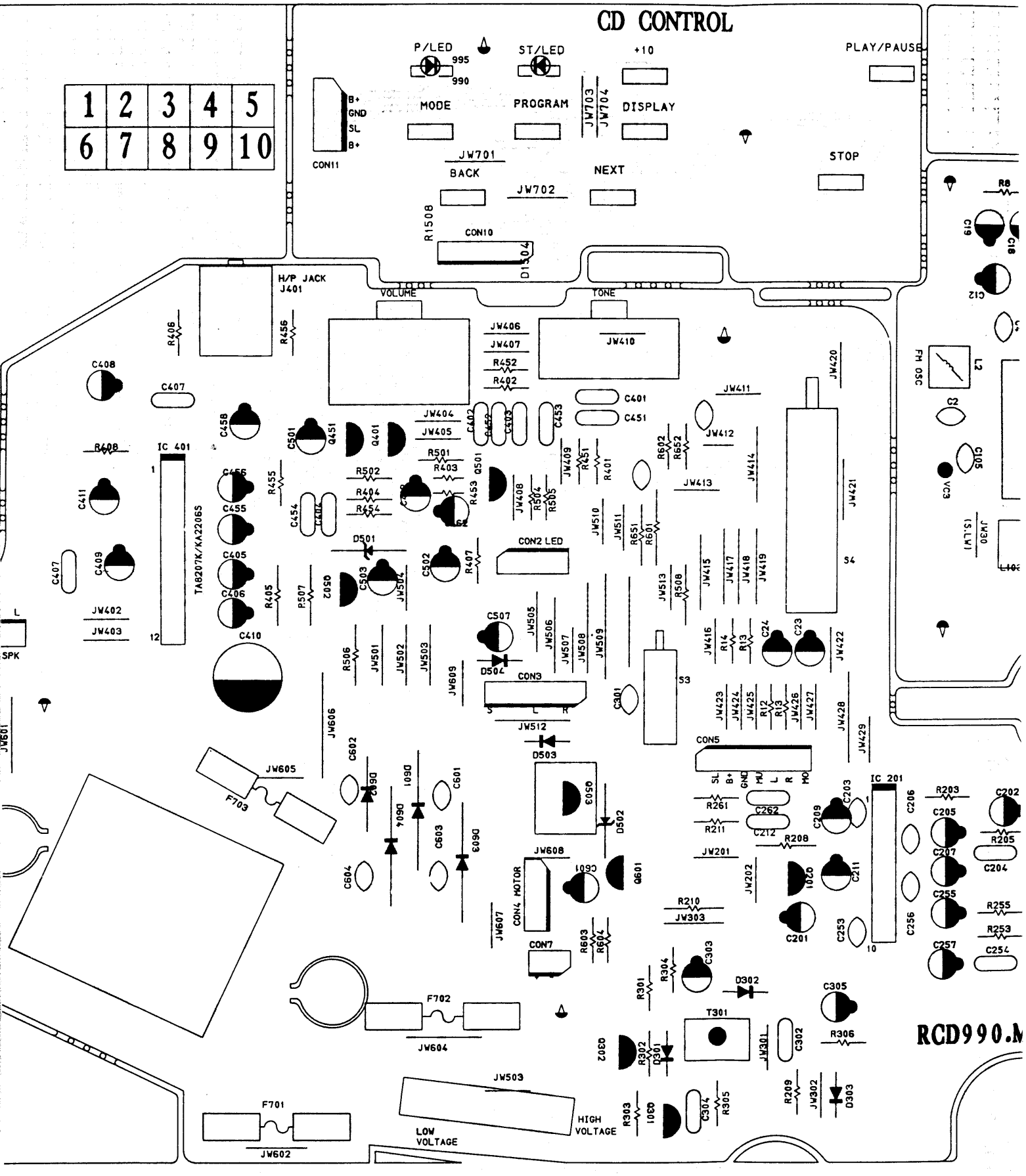
■ PCB PATTERN & MARKING DIAGRAM

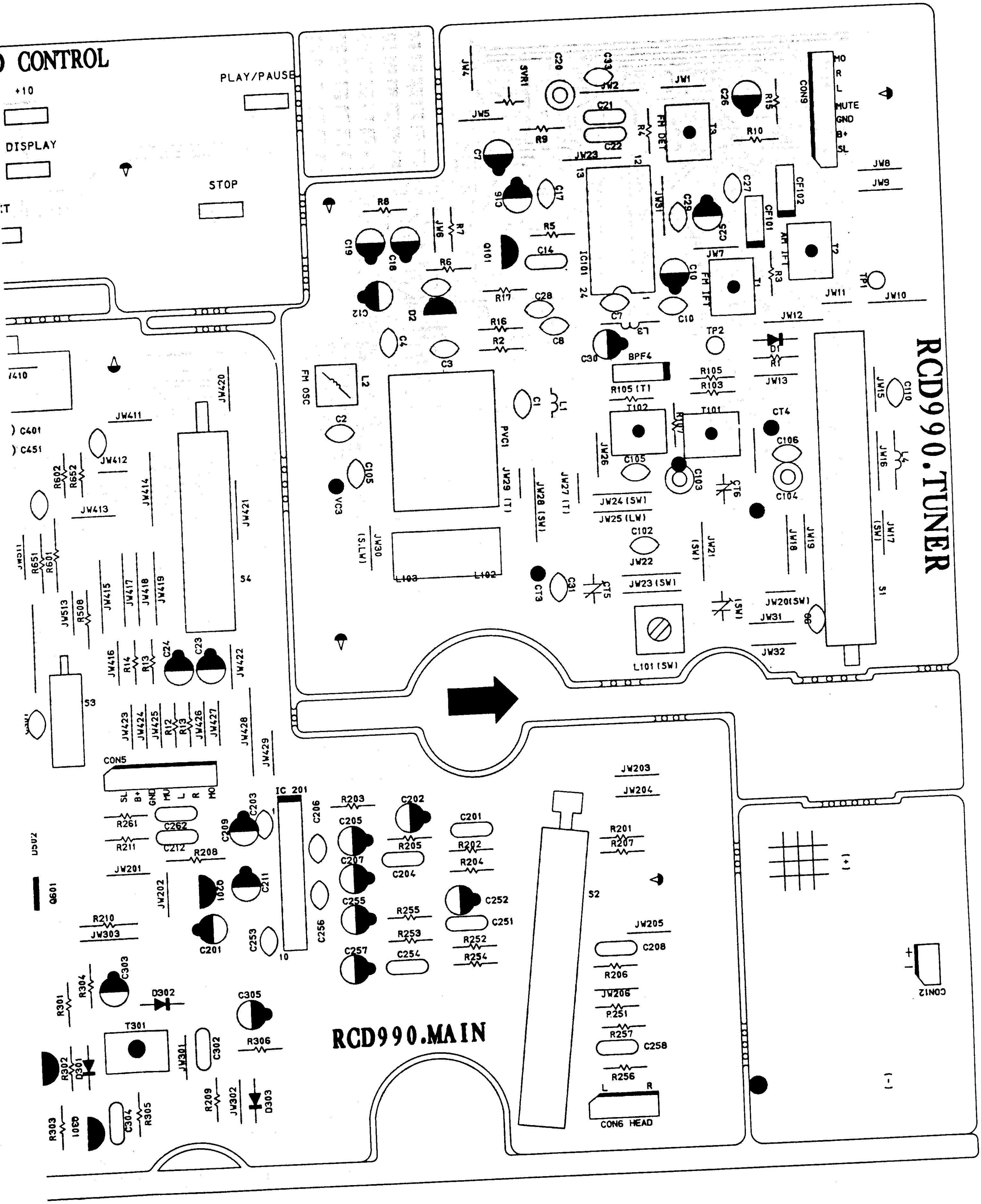
1. RADIO CASSETTE SECTION (PARTS SIDE)



ERN & MARKING DIAGRAM

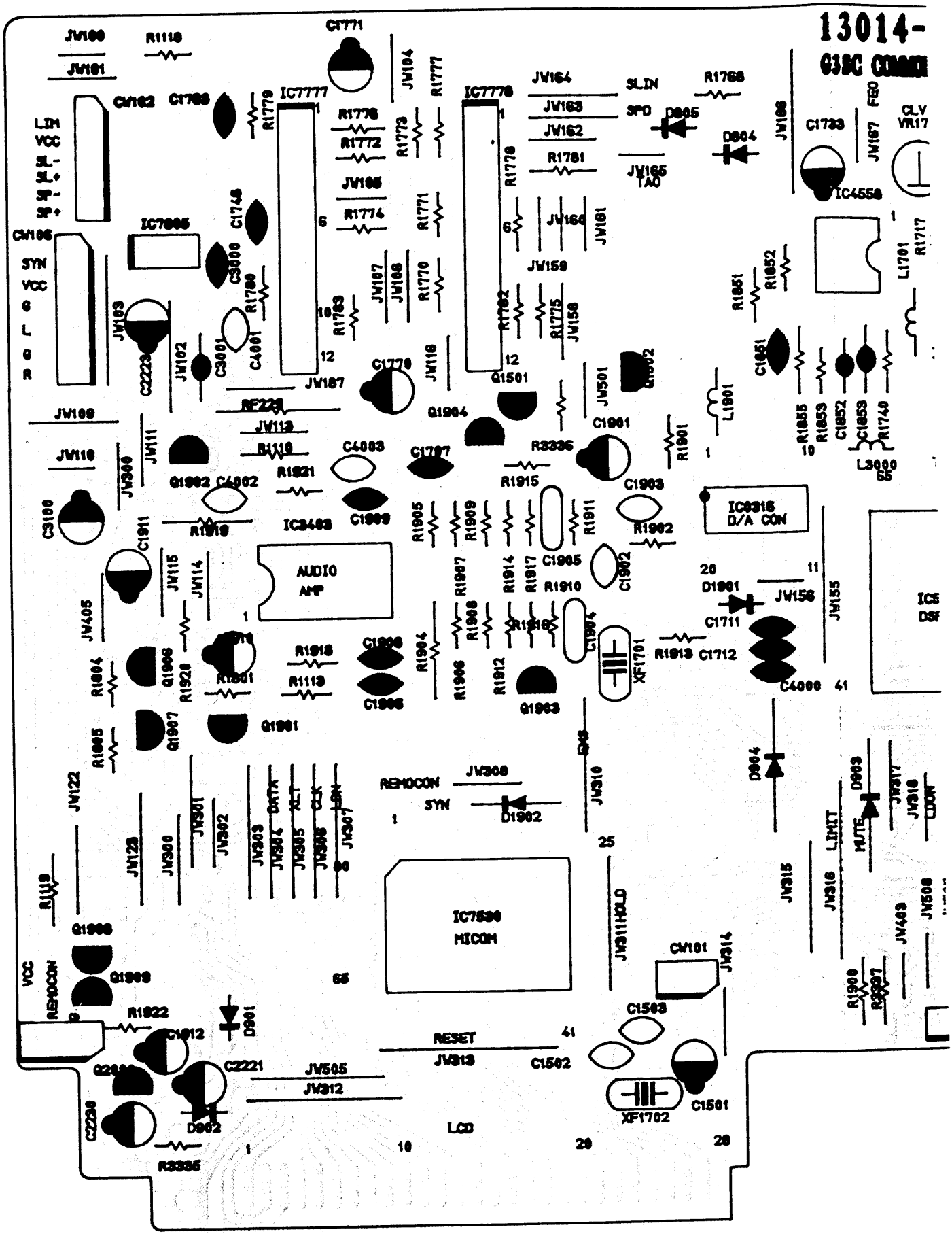
SETTE SECTION (PARTS SIDE)

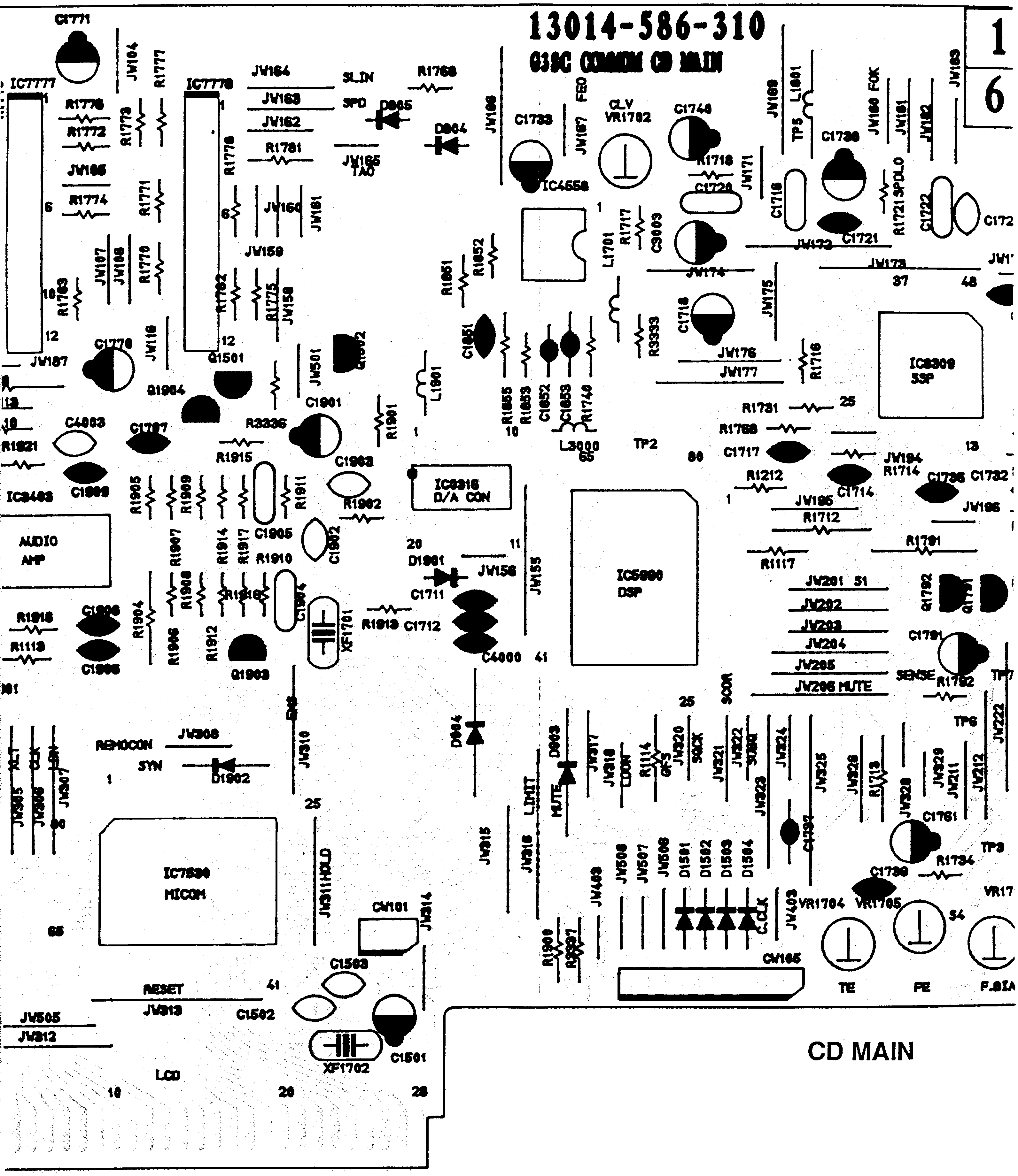




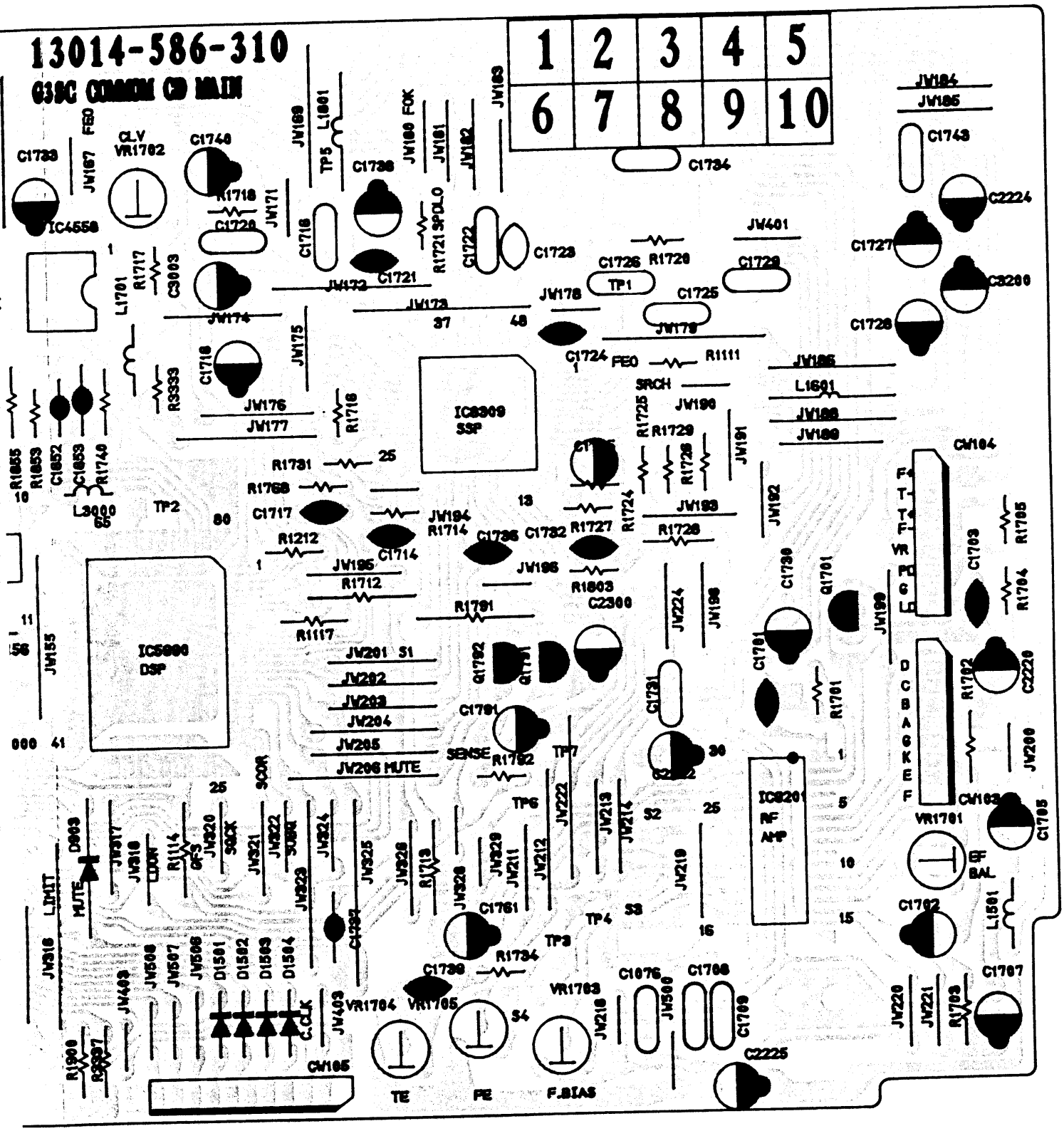
CONTROL
PLAY/PAUSE
+10
DISPLAY
STOP
RCD990.TUNER
RCD990.MAIN
FM OSC
FM DET
AM IFT
FM IFT
CON6 HEAD

2. CD SECTION (PARTS SIDE)




13014-586-310
IC7777
IC7776
IC5900
DSP
IC8309
SSP
IC6316
D/A CON
IC7530
MICOM
AUDIO
AMP
REMOCON
RESET
LCD
TE
FE
SENSE
MUTE
LIMIT
HOLD

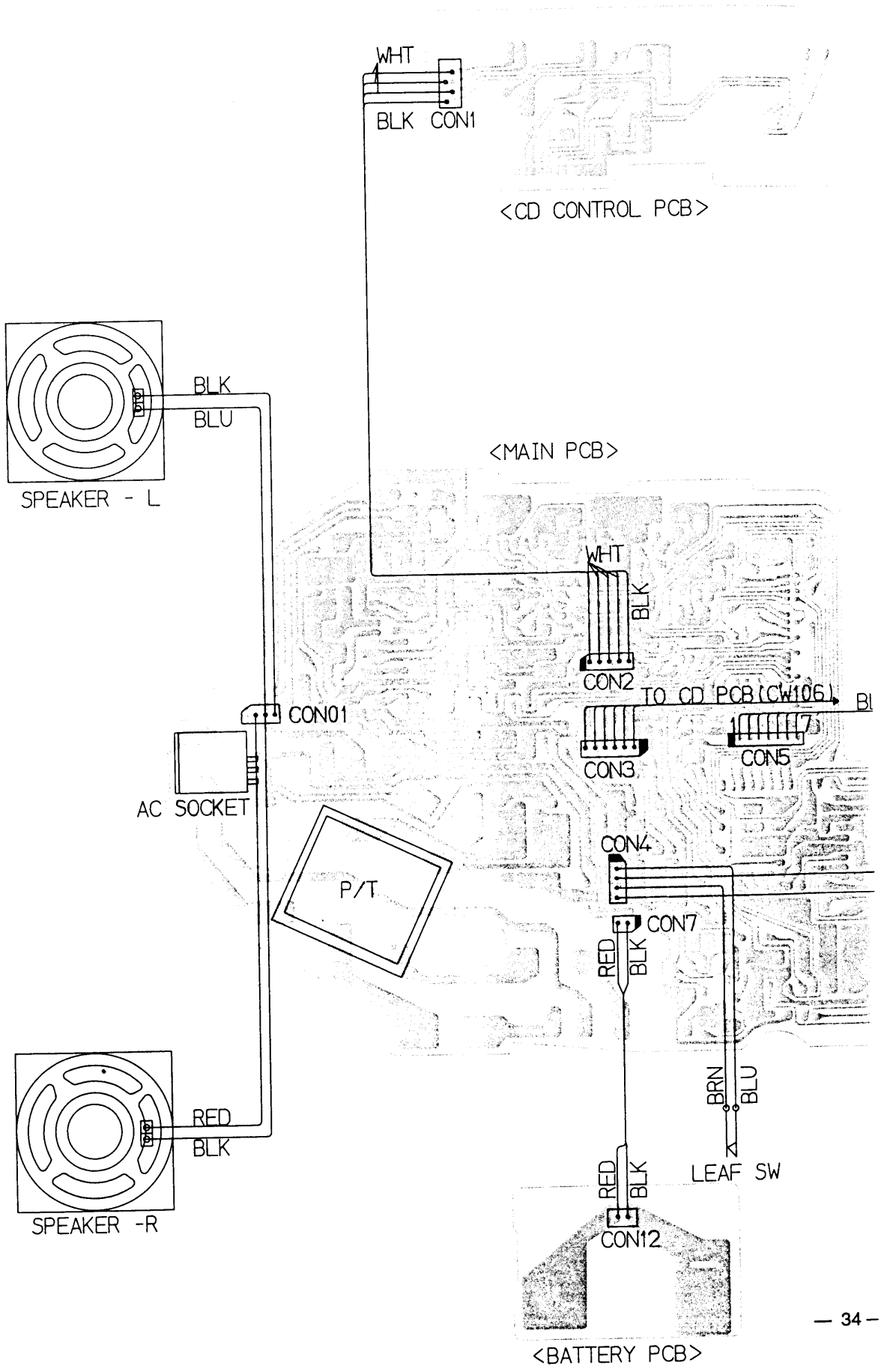
CD MAIN


13014-586-310
G35C COMMON CD MAIN
1 2 3 4 5
6 7 8 9 10
IC4558
IC8300 SSP
IC8000 DSP
IC8201 RF AMP
CLV VR1702
VR1701 EF BAL
VR1704
VR1705
VR1703
TE
FE
F.BIAS
SRCH
SENSE
SCOR
LIMIT
MUTE
C.CLK
TP1
TP2
TP3
TP4
TP5
TP6
TP7
CW104
CW105
CW103
JW201 S1
JW206 MUTE

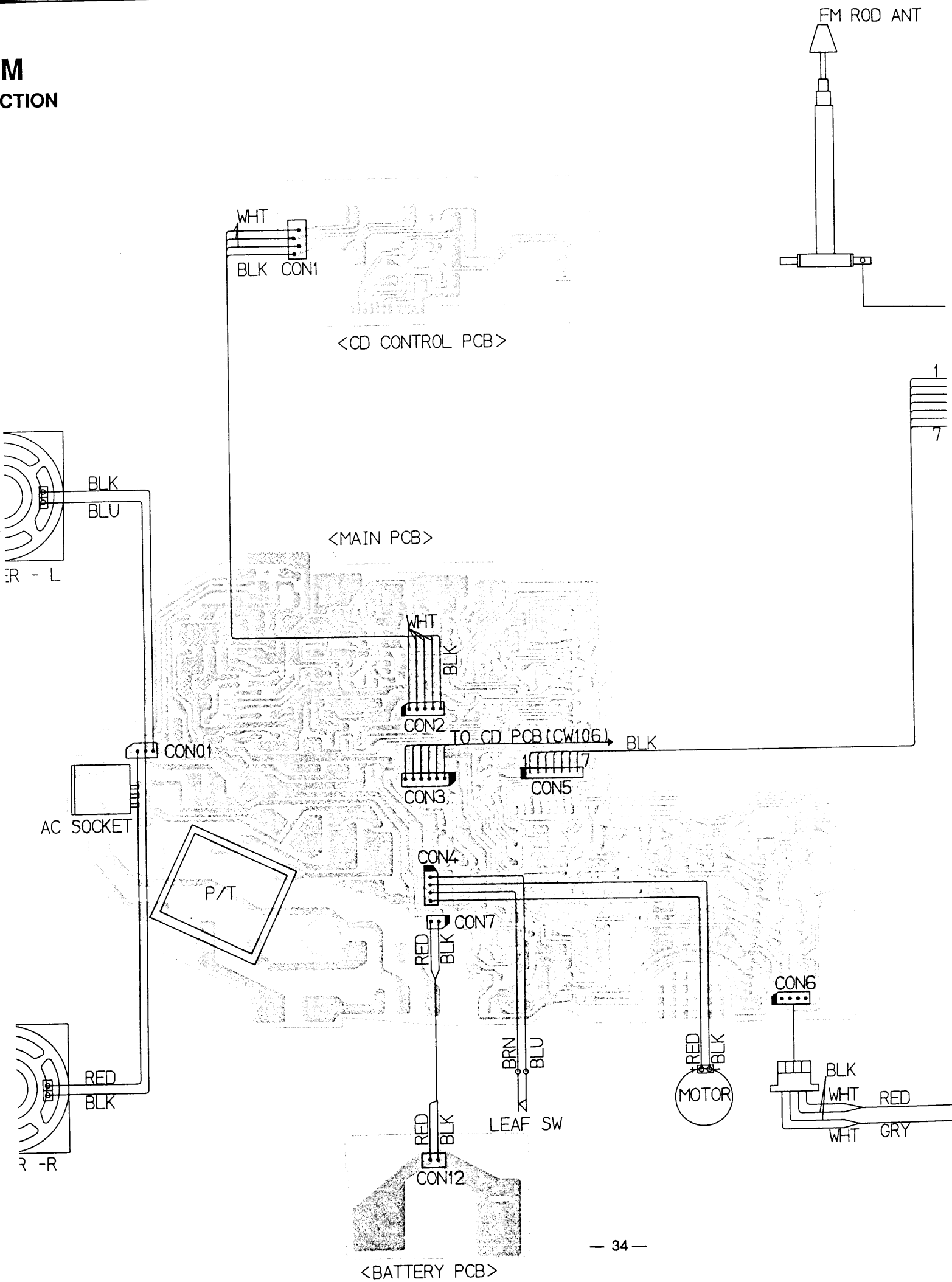
CD MAIN

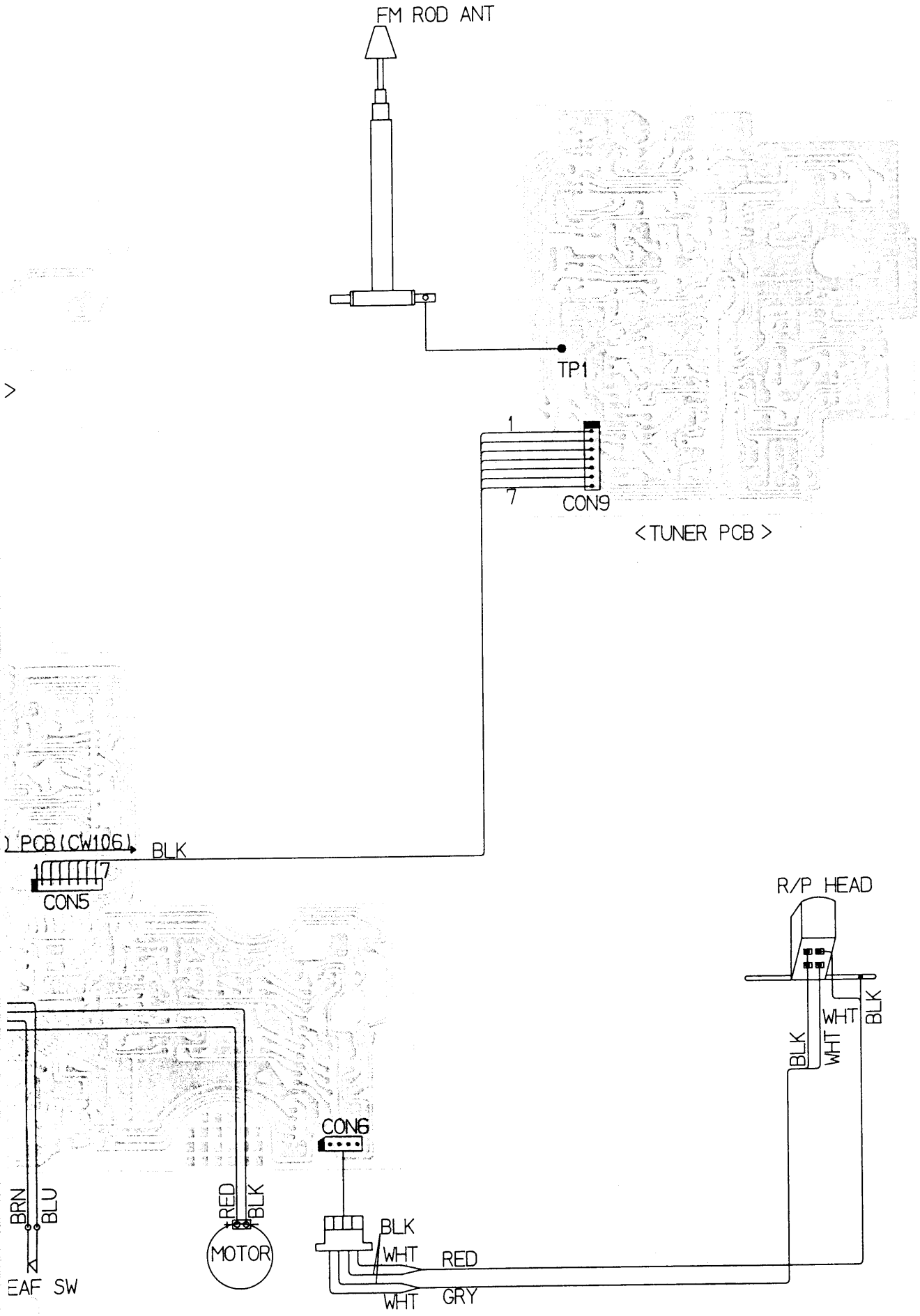
■ WIRING DIAGRAM

1. RADIO CASSETTE SECTION



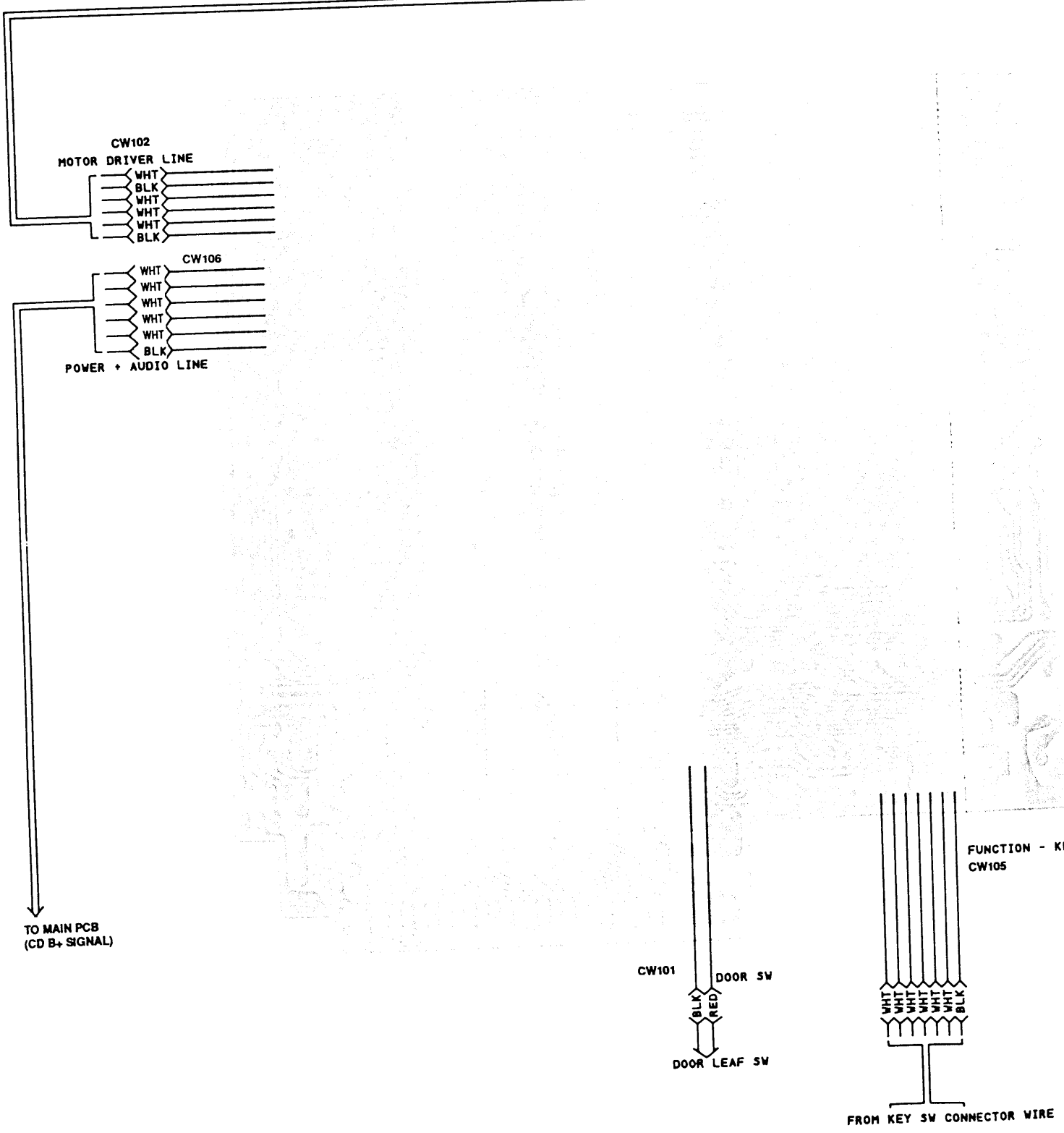
M
CTION

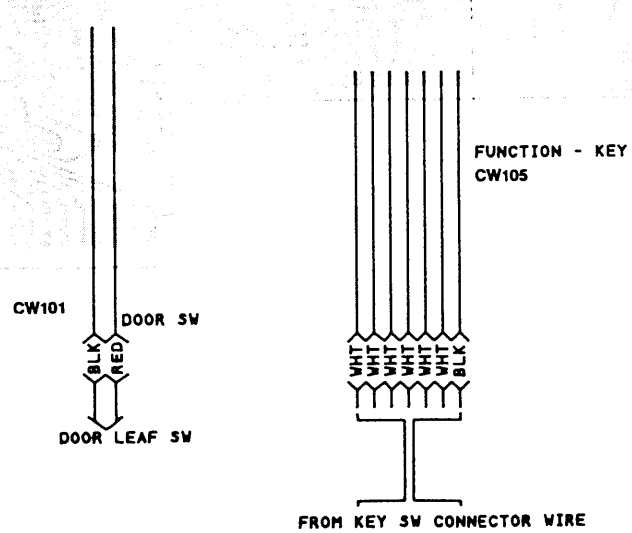

FM ROD ANT
WHT
BLK CON1
<CD CONTROL PCB>
1
7
BLK
BLU
<MAIN PCB>
WHT
BLK
CON2
TO CD PCB(CW106)
BLK
CON01
CON3
CON5
AC SOCKET
P/T
CON4
CON7
RED
BLK
CON6
BRN
BLU
RED
BLK
BLK
WHT
RED
WHT
GRY
MOTOR
LEAF SW
RED
BLK
CON12
<BATTERY PCB>


FM ROD ANT
TP1
1
7
CON9
<TUNER PCB>
PCB(CW106)
BLK
1
7
CON5
R/P HEAD
BLK
WHT
BLK
BLK
WHT
CON6
BRN
BLU
RED
BLK
MOTOR
BLK
WHT
RED
WHT
GRY
EAF SW

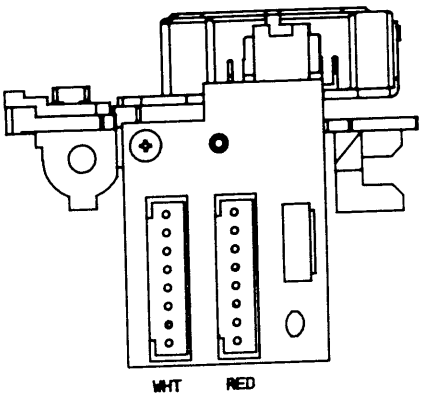
2. CD SECTION

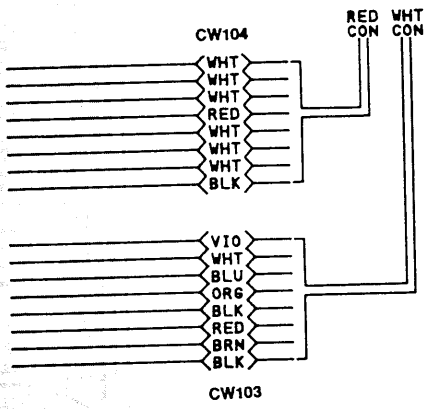
CD MAIN




CW101
DOOR SW
BLK
RED
DOOR LEAF SW
FUNCTION - KEY
CW105
WHT
WHT
WHT
WHT
WHT
BLK
FROM KEY SW CONNECTOR WIRE

TO PICK-UP MOTOR PIN3

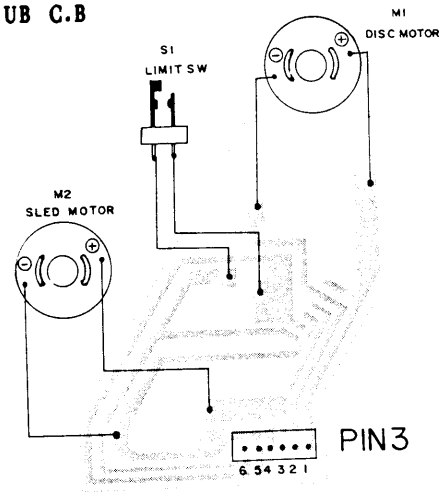




FUNCTION - KEY
CW105

CONNECTOR WIRE

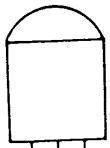
CD SUB C.B



CD PICK-UP PCB

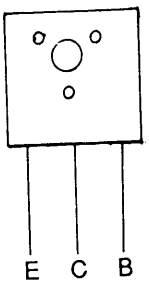
RNAL DIAGRAM

TE SECTION



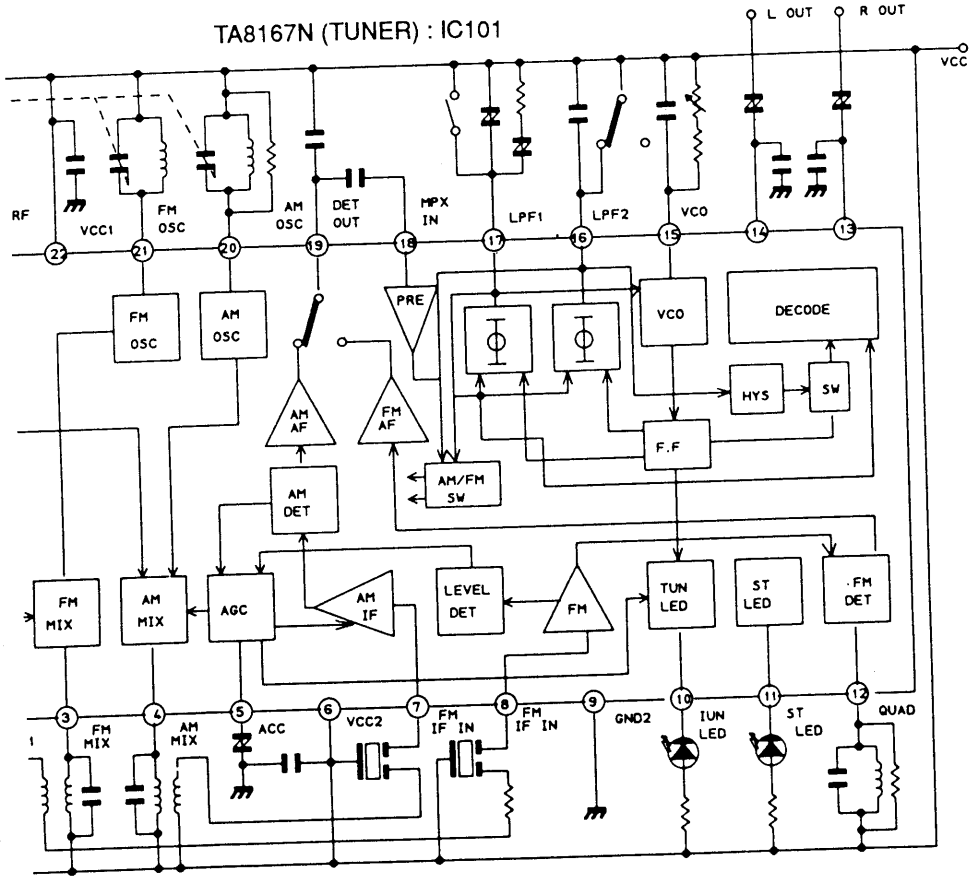
E B C
NPN
KSC1008-Y
KSC 900-L
KSC 945-Y
KSD 227-Y

E C B
NPN
KSR1007
KSR1009
KSR1003

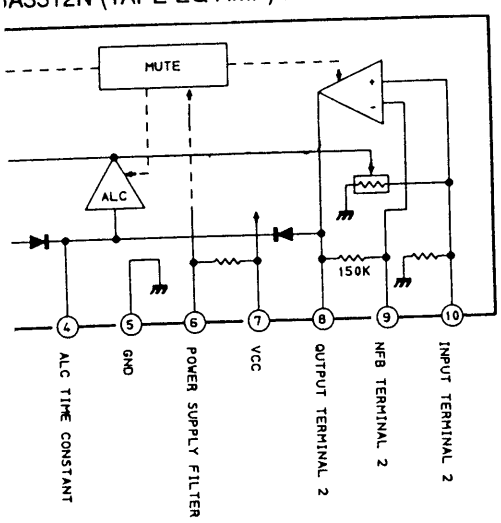


E C B
NPN
KSD 882-O

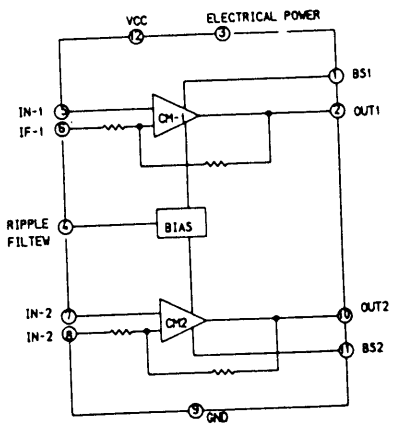
TA8167N (TUNER) : IC101



A3312N (TAPE EQ AMP) : IC201

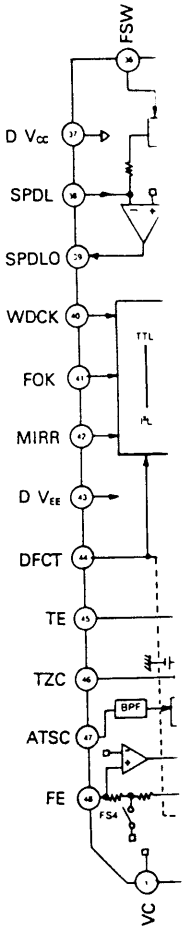


TA8207K (POWER AMP) : IC401

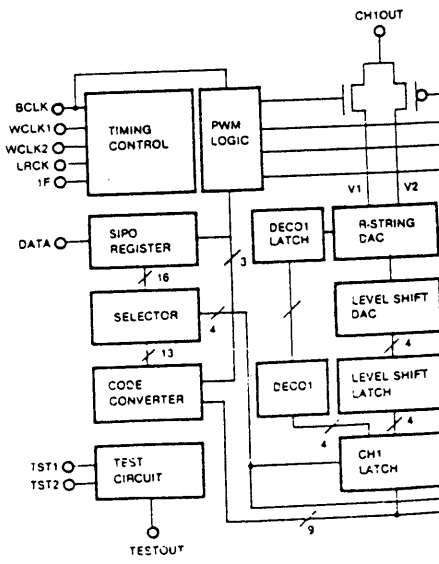


2. CD SECTION

- KA8309 (SERVO SIGNAL PROCESSOF

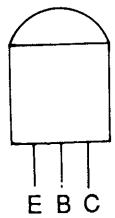


- KDA0316LD (D/A CONVERTOR) : IC031

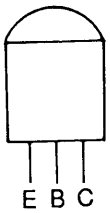


IC & TR INTERNAL DIAGRAM

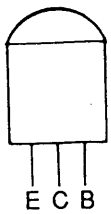
1. RADIO CASSETTE SECTION



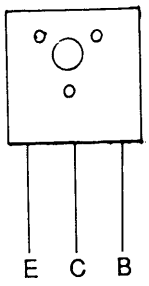
PNP
KSA 733-Y



NPN
KSC1008-Y
KSC 900-L
KSC 945-Y
KSD 227-Y

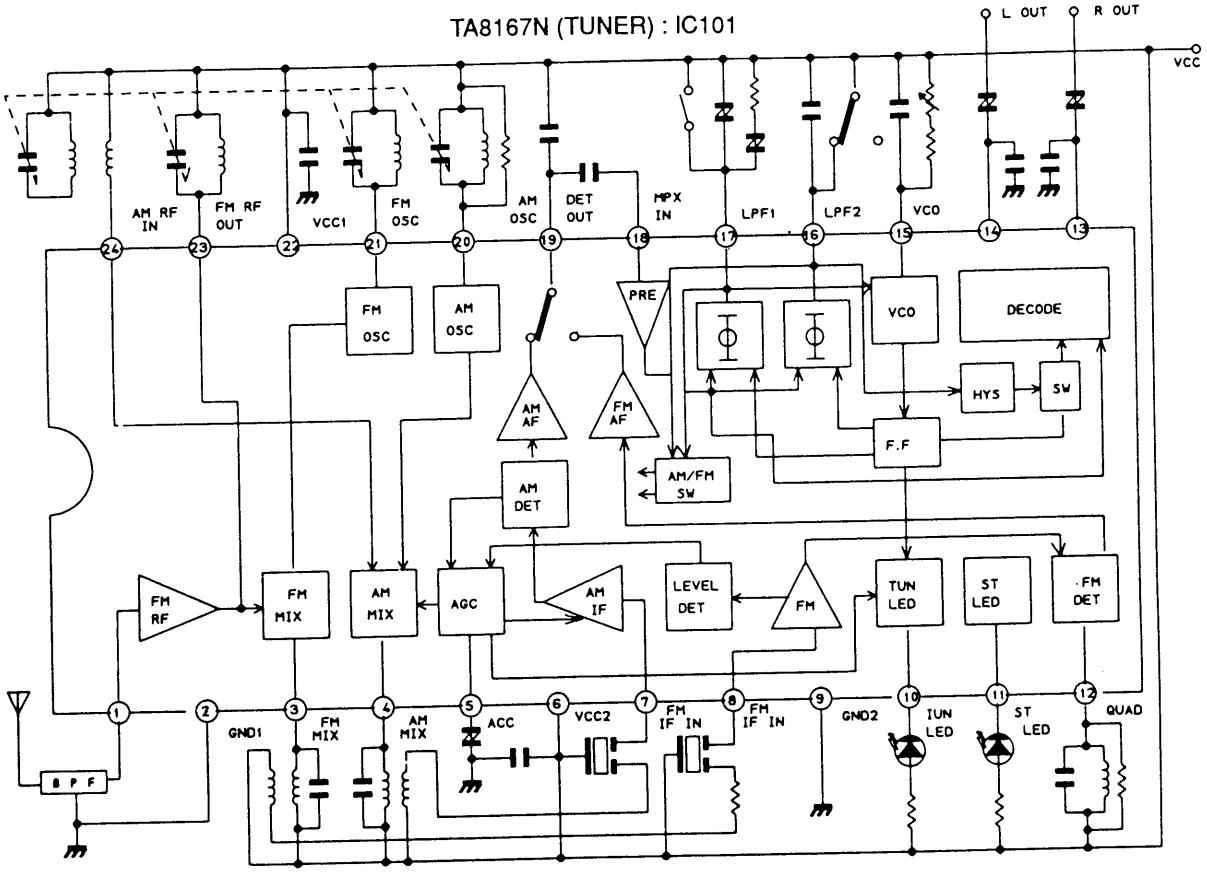


NPN
KSR1007
KSR1009
KSR1003

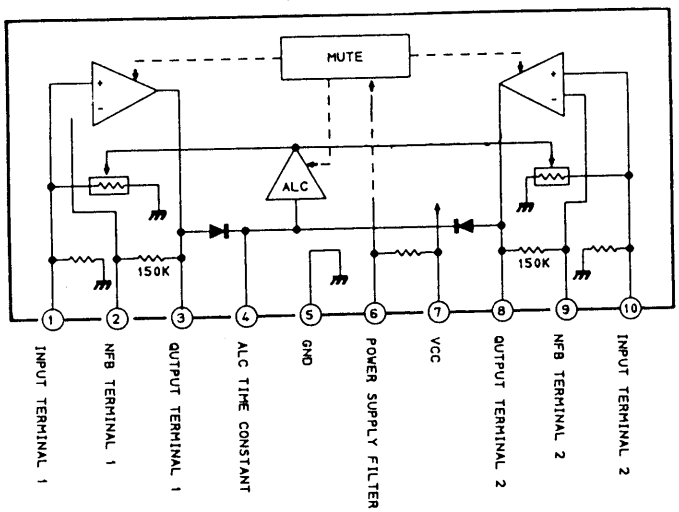


NPN
KSD 882-O

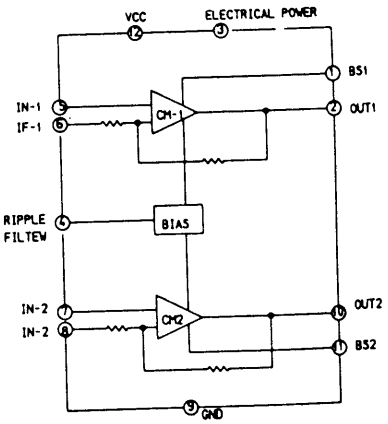
TA8167N (TUNER) : IC101



BA3312N (TAPE EQ AMP) : IC201

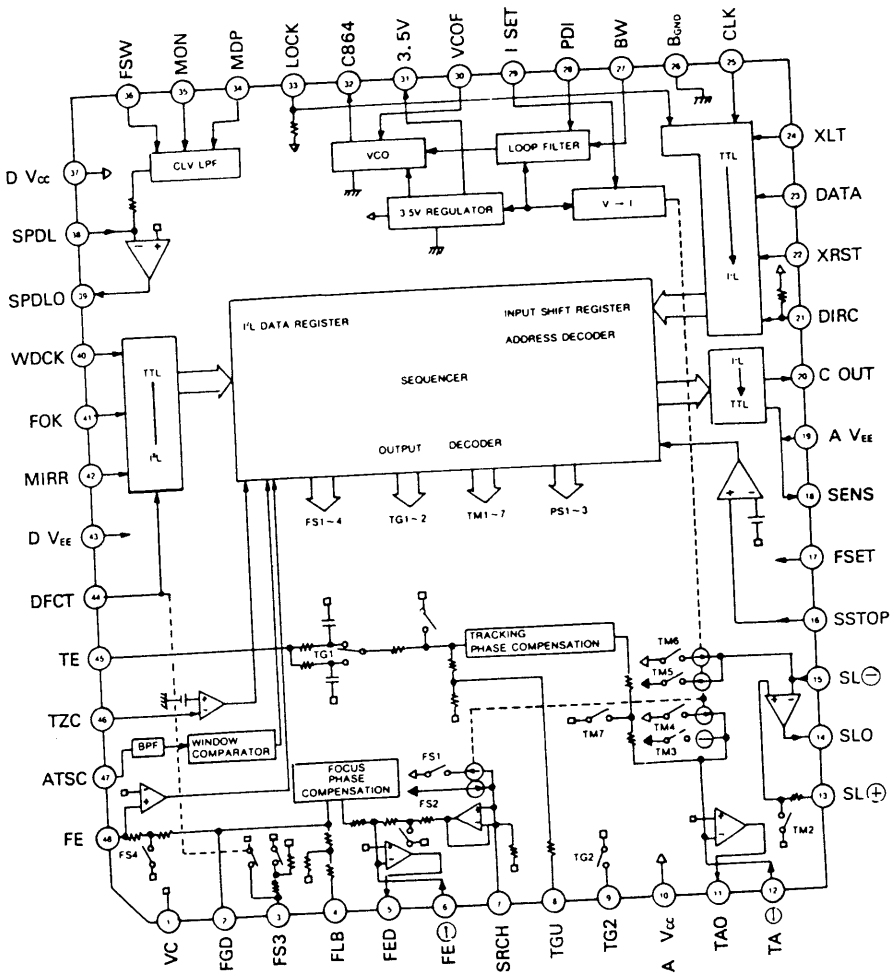


TA8207K (POWER AMP) : IC401

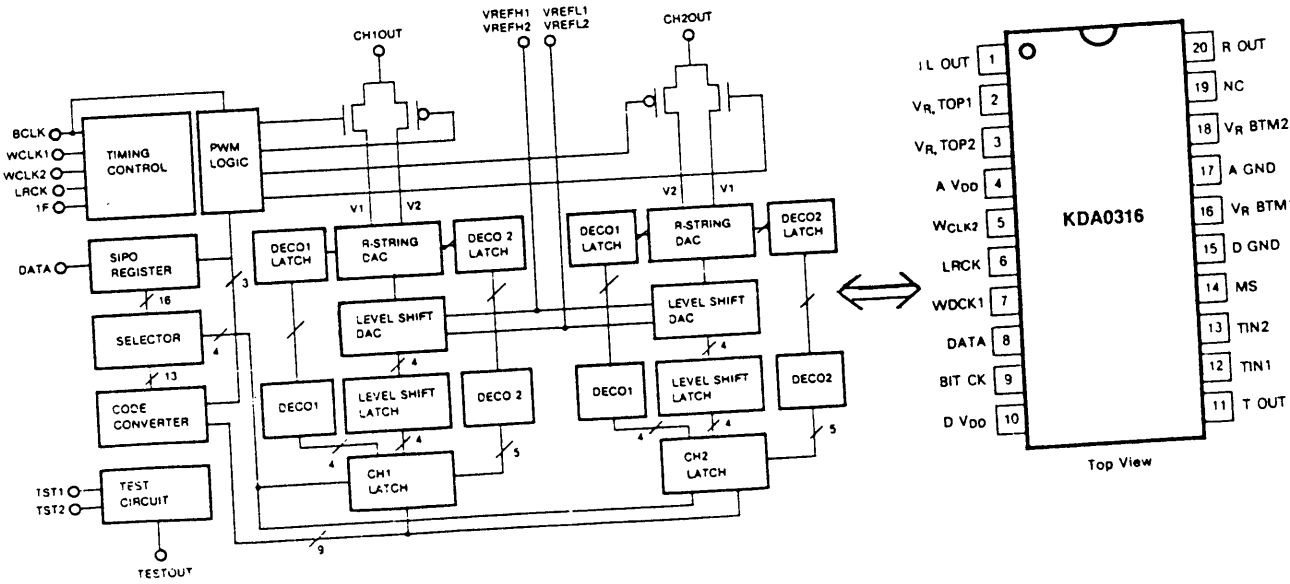


2. CD SECTION

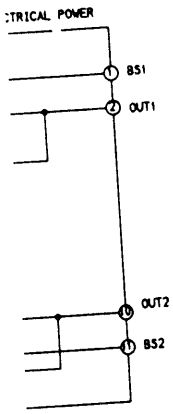
- KA8309 (SERVO SIGNAL PROCESSOR) : IC8309



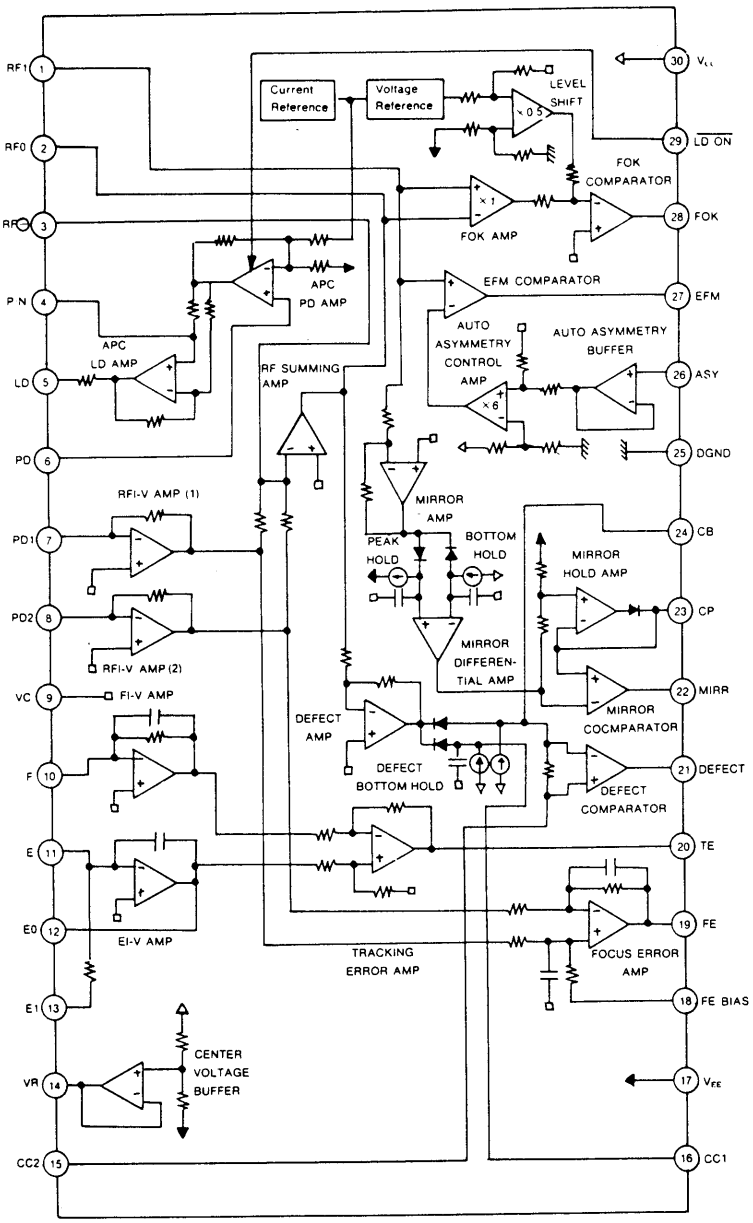
- KDA0316LD (D/A CONVERTOR) : IC0316



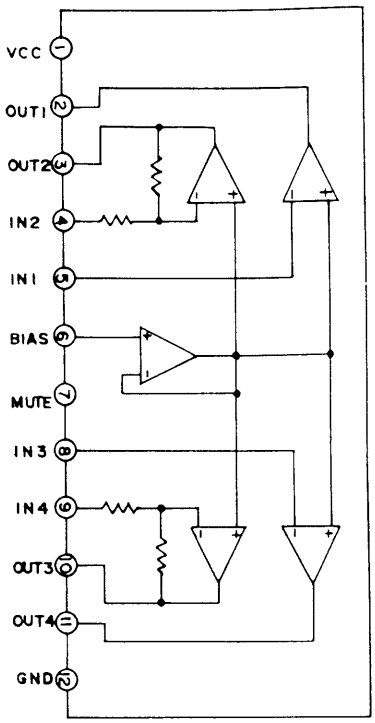
AMP) : IC401



- KA9201 (RF AMP) : IC9201

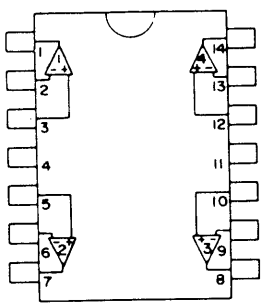


- KA9257 (BTL DRIVER) : IC7777, 7778



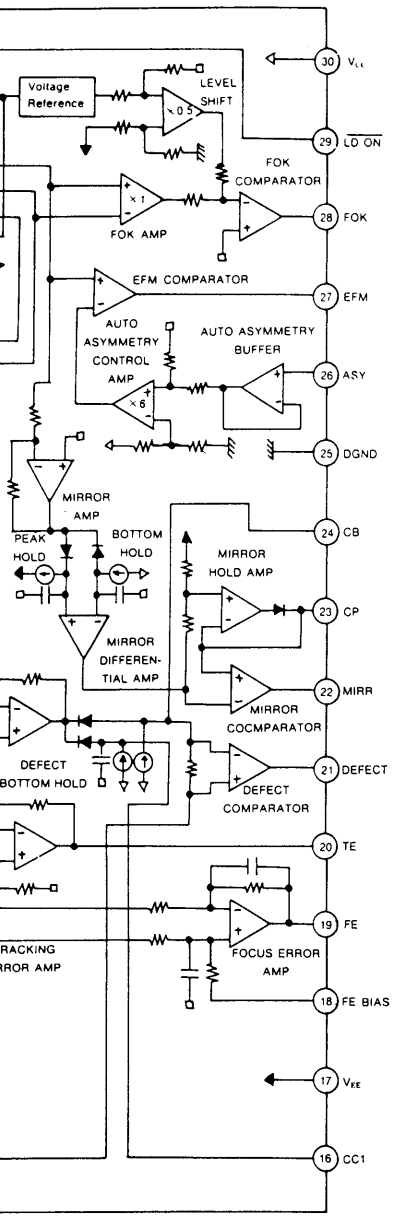
- KS

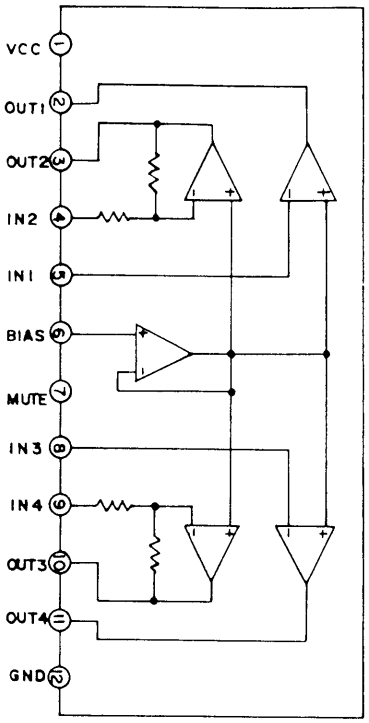
- NJM3403AD (OP AMP) : IC3403

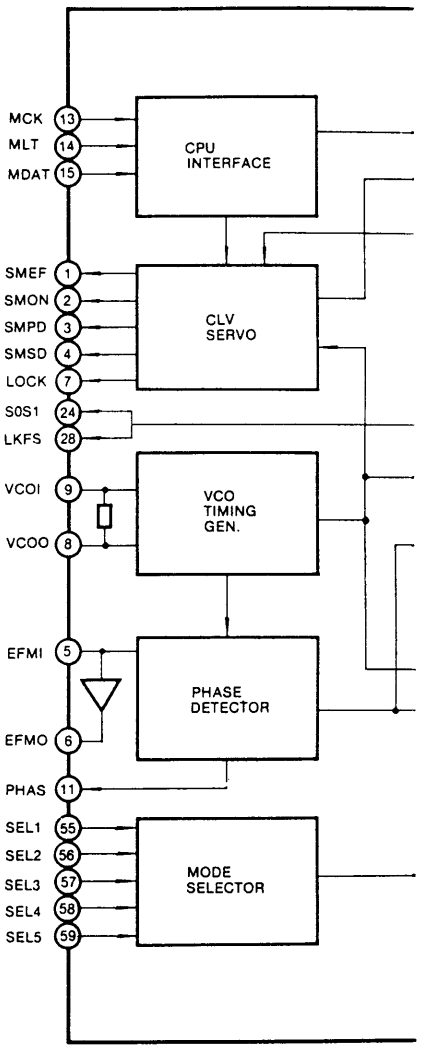


PIN FUNCTION

1. OUTPUT 1
2. – INPUT 1
3. + INPUT 1
4. V+
5. + INPUT 2
6. – INPUT
7. OUTPUT 2
8. OUTPUT 3
9. – INPUT 3
10. + INPUT
11. V
12. + INPUT 4
13. – INPUT 4
14. OUTPUT 4





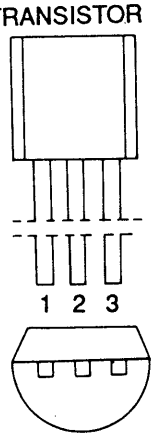


PIN FUNCTION

1. OUTPUT 1
2. – INPUT 1
3. + INPUT 1
4. V+
5. + INPUT 2
6. – INPUT
7. OUTPUT 2
8. OUTPUT 3
9. – INPUT 3
10. + INPUT
11. V
12. + INPUT 4
13. – INPUT 4
14. OUTPUT 4

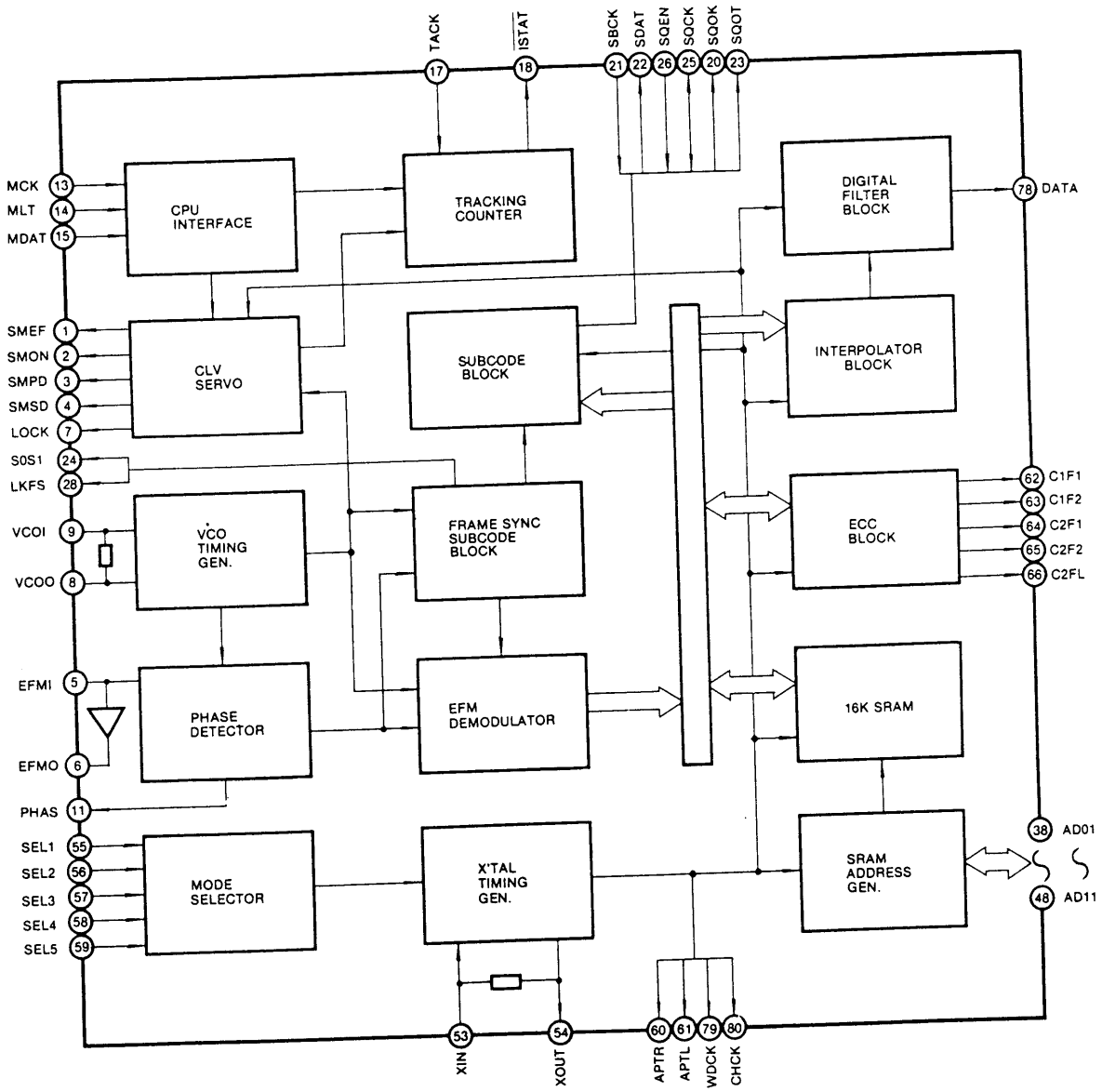
TRANSISTOR

KSR1003
KSR2003
KSR1007
KSR2007



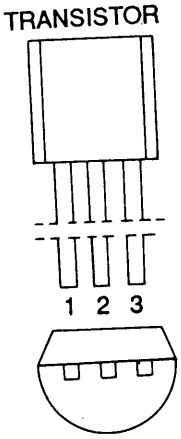
1. EMITTER 2. COLLECTOR 3. BASE 1. E

• KS5990 (DIGITAL SIGNAL PROCESSOR) : IC5990



TRANSISTOR

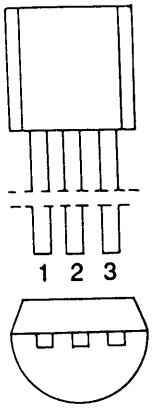
KSR1003
KSR2003
KSR1007
KSR2007



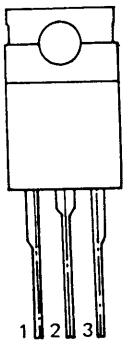
1. EMITTER 2. COLLECTOR 3. BASE

TRANSISTOR

KSC945
KSB564



1. EMITTER 2. BASE 3. COLLECTOR



MC78M05C: IC7805 (VOLTAGE REGULATOR)
1. INPUT 2. GND 3. OUTPUT

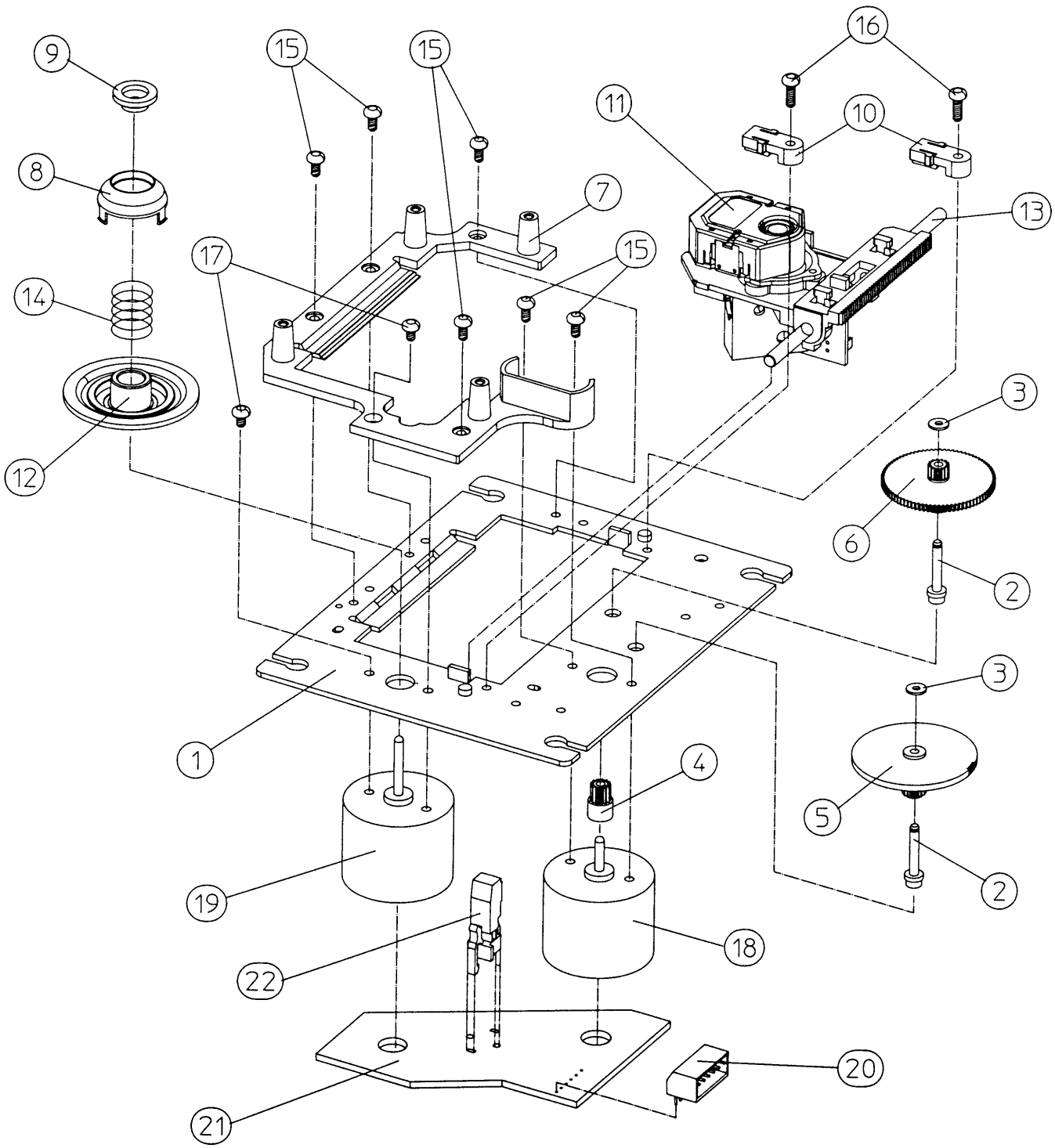
■ EXPLODED VIEW

1. CD DECK (CMS-V10)

DECK A

NO.
4
5
6
10
11
13
16
18
22

* Parts
If you



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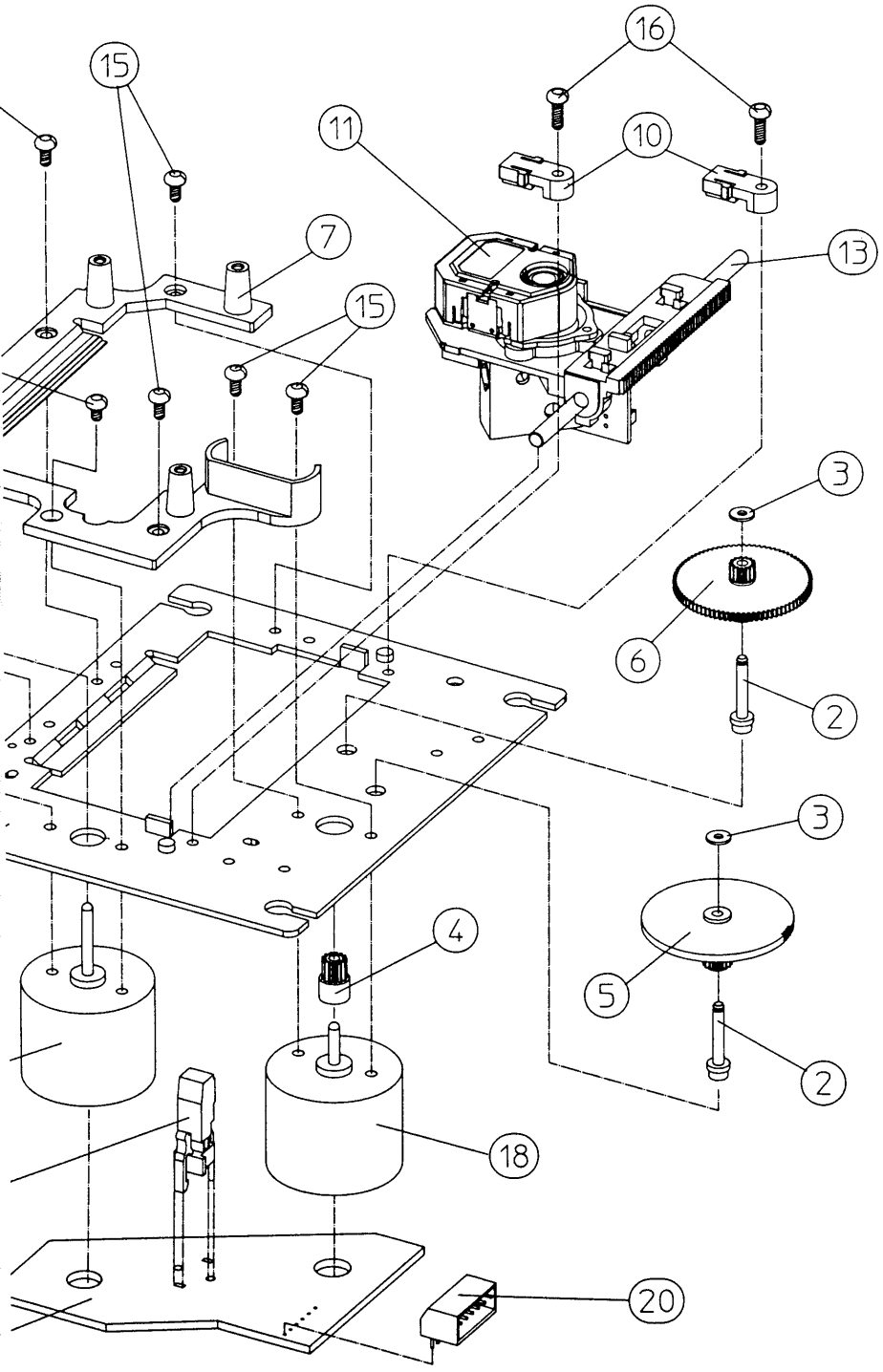


DECK ASS'Y : CMS-V10 (14929-407-010)

NO.	CODE NO.	
4	15214-510-510	GEAR-P/U (A) ; P.(
5	15214-510-610	GEAR-P/U (B) ; N\
6	15214-510-710	GEAR-P/U (C) ; P.(
10	16033-505-210	HOLDER-SHAFT ;
11	14239-101-610	PICK UP ; OPTICA
13	15104-503-410	SHAFT-P/U ; SUS
16	17008-120-063	SCREW-PH ; +M2
18	14769-057-250	MOTOR-FEED ; R
22	13564-601-100	LEAF-SW.; MSW-1

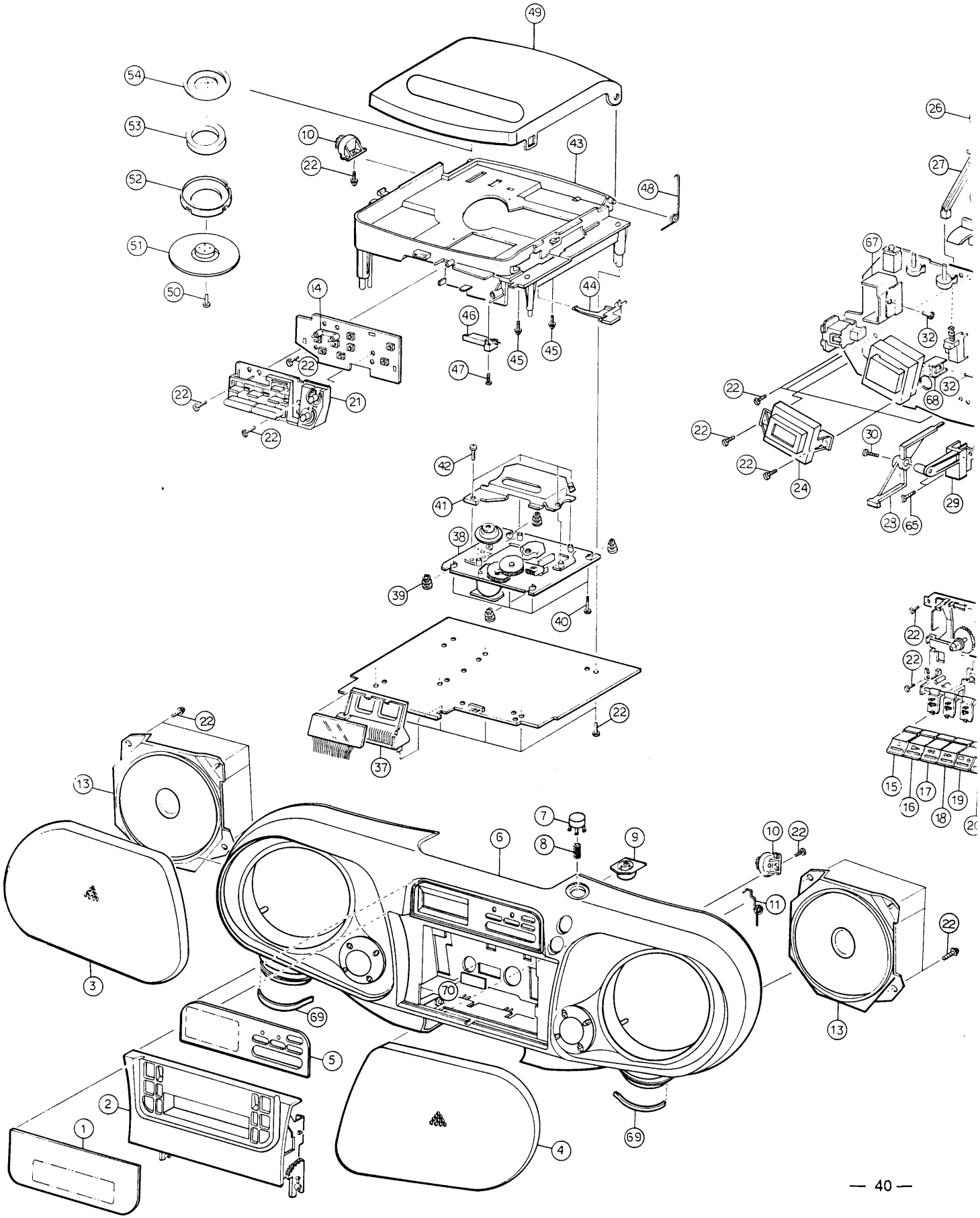
* Parts which are not described in the CD DECK list are
If you need any other parts except those described, a

DECK ASS'Y : CMS-V10 (14929-407-010)

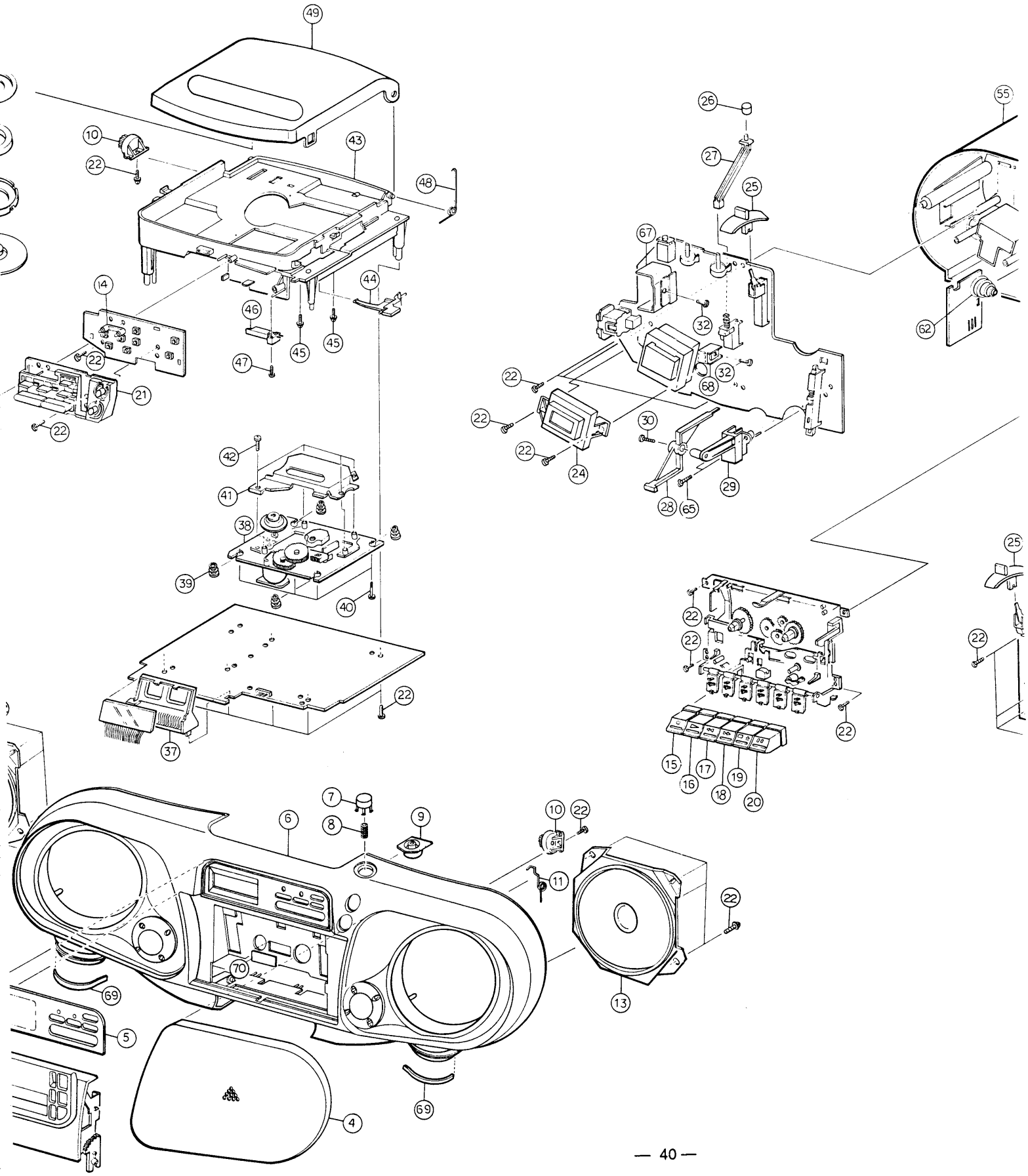
NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY
4	15214-510-510	GEAR-P/U (A) ; P.O.M (DURACON KT-20)	1
5	15214-510-610	GEAR-P/U (B) ; NYLON 12	1
6	15214-510-710	GEAR-P/U (C) ; P.O.M (DURACON KT-20)	1
10	16033-505-210	HOLDER-SHAFT ; ABS 94HB	2
11	14239-101-610	PICK UP ; OPTICAL HEAD SOH 90T4	1
13	15104-503-410	SHAFT-P/U ; SUS 420J2 Ø3	1
16	17008-120-063	SCREW-PH ; +M2 x 6 FE FZB	2
18	14769-057-250	MOTOR-FEED ; RF-310T (SHAFT 10.9)	1
22	13564-601-100	LEAF-SW.; MSW-1731CVC	1

* Parts which are not described in the CD DECK list are not serviceable.
If you need any other parts except those described, apply CD DECK ass'y.

■ EXPLODED VIEW



D VIEW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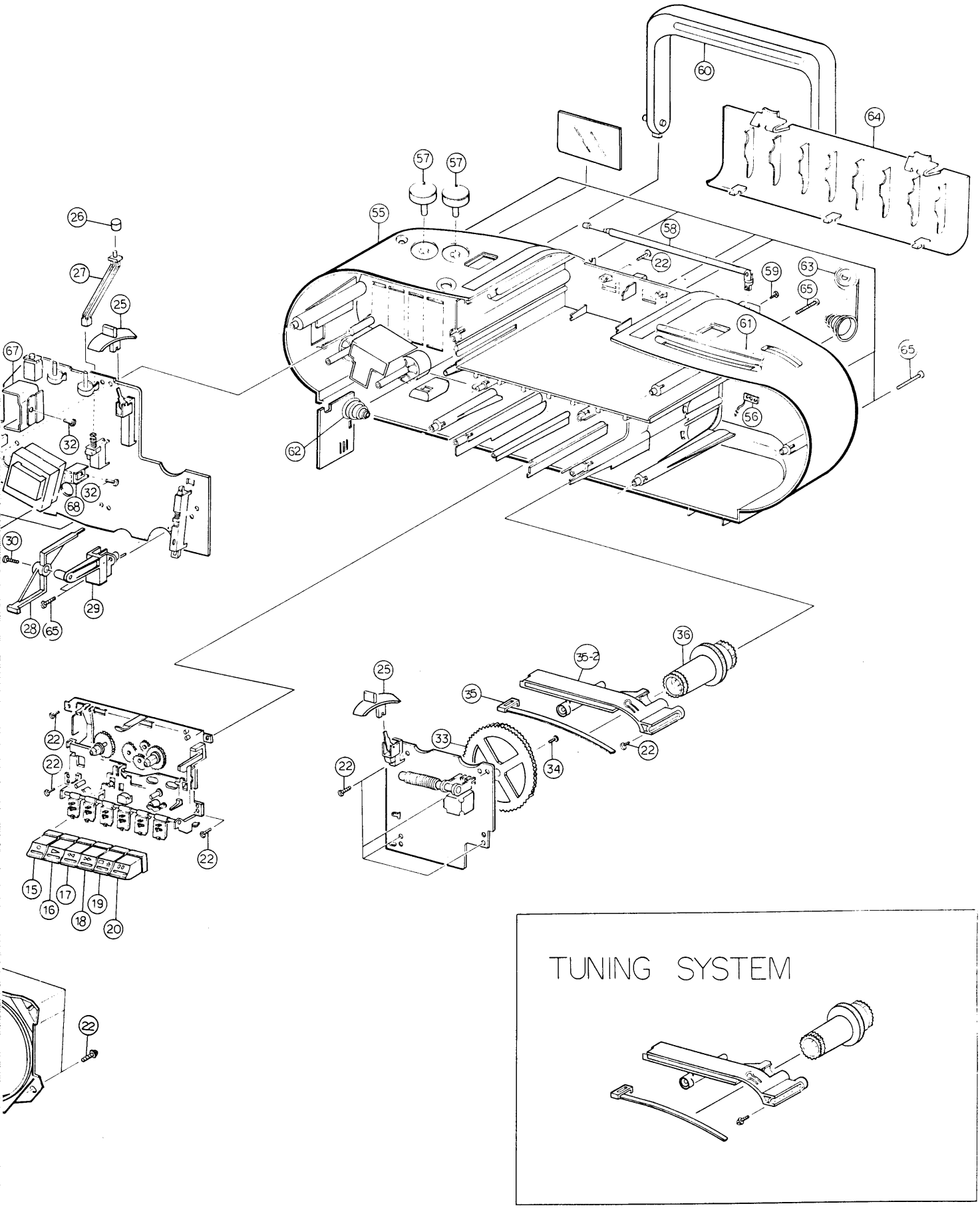
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TUNING SYSTEM

NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
1	17654-571-030	WINDOW-CASSETTE ; PC S/S	1	
2	17642-544-410	DOOR-CASSETTE ; ABS BLK	1	
3	17710-500-010	GRILLE-SPEAKER 'L' ; SPC-1	1	SNA
4	17710-500-110	GRILLE-SPEAKER 'R' ; SPC-1	1	SNA
5	17654-571-130	WINDOW-CD FUNCTION ; PC SILK S/S	1	
6	16000-535-410	CABINET-FRONT ; HIPS BLK	1	
7	17624-628-010	KNOB-CD EJECT ; ABS BLK	1	
8	16674-573-410	SPRING-PUSH ; SUS-27 PI0.35	1	
9	16604-539-310	HOLDER-EJECT ; ABS BLK	1	
10	15253-504-110	DAMPER-GEAR ; POM KIFCO M0.8 86-105GR	2	
11	16674-568-110	SPRING-CASSETTE ; SWP D = 1.0	1	
13	14029-114-220	SPK-GENERAL ; D900 10CM 4 Ω 5W	2	
14	16604-541-810	HOLDER-LED ; ABS BLK	1	
15	17623-586-660	KNOB-DECK, REC ; ABS BLK	1	
16	17623-586-650	KNOB-DECK, PLAY ; ABS BLK	1	
17	17623-586-640	KNOB-DECK, REW ; ABS BLK	1	
18	17623-586-630	KNOB-DECK, F.F ; ABS BLK	1	
19	17623-586-620	KNOB-DECK, STOP ; ABS BLK	1	
20	17623-586-610	KNOB-DECK, PAUSE ; ABS BLK	1	
21	17623-586-410	KNOB-CD FUNCTION ; ABS BLK	1	
22	17458-130-121	SCREW-TAP TITE, BH ; B-3 x 12 FE FZY	32	
24	16034-506-010	BRKT-P/T ; ABS NATURAL	1	
25	17624-619-010	KNOB-LEVER ; ABS BLK	2	
26	17624-634-610	KNOB-DSL ; ABS BLK	1	
27	15254-515-610	KLINK-TAPE SEL ; ABS BLK	1	
28	15254-515-710	LINK-RECORD ; PC NATURAL	1	
29	16024-503-710	CHASSIS-RECORD ; ABS NATURAL	1	
30	17558-230-081	SCREW-TAP TITE SPEC ; S-3 x 8 FZY	1	
32	17048-130-081	SCREW-RH ; +M3 x 8 FE FZY	2	
33	15214-510-410	WHEEL-DRUM ; ABS BLK	1	
34	17048-126-051	SCREW-RH ; +M2.6 x 5 FE FZY	1	
35	18004-512-510	POINTER ; PE WHT	1	
35-2	16023-509-310	CHASSIS-MAIN ; ABS BLK	1	
36	17623-587-110	KNOB-TUNING ; ABS BLK	1	
37	16604-542-210	HOLDER-LCD ; ABS BLK	1	
38	14929-407-010	DECK-CD ; CMS-V10/A	1	
39	16174-503-410	RUBBER-CD ; SI RUBBER	4	
40	15104-531-710	SHAFT-CD ; FE FZY 2.6 x 10.5	4	
41	16133-503-620	CAP-P/U ; SUS	1	
42	17158-120-052	SCREW-TAP, BH ; 2-2 x 5 FE FZW	4	

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* SNA: Service Not Available

DESCRIPTION & SPECIFICATION	Q'TY	REMARK
WINDOW-CASSETTE ; PC S/S	1	
DOOR-CASSETTE ; ABS BLK	1	
GRILLE-SPEAKER 'L' ; SPC-1	1	SNA
GRILLE-SPEAKER 'R' ; SPC-1	1	SNA
WINDOW-CD FUNCTION ; PC SILK S/S	1	
CABINET-FRONT ; HIPS BLK	1	
KNOB-CD EJECT ; ABS BLK	1	
SPRING-PUSH ; SUS-27 PI0.35	1	
HOLDER-EJECT ; ABS BLK	1	
DAMPER-GEAR ; POM KIFCO M0.8 86-105GR	2	
SPRING-CASSETTE ; SWP D = 1.0	1	
SPK-GENERAL ; D900 10CM 4 Ω 5W	2	
HOLDER-LED ; ABS BLK	1	
KNOB-DECK, REC ; ABS BLK	1	
KNOB-DECK, PLAY ; ABS BLK	1	
KNOB-DECK, REW ; ABS BLK	1	
KNOB-DECK, F.F ; ABS BLK	1	
KNOB-DECK, STOP ; ABS BLK	1	
KNOB-DECK, PAUSE ; ABS BLK	1	
KNOB-CD FUNCTION ; ABS BLK	1	
SCREW-TAP TITE, BH ; B-3 x 12 FE FZY	32	
BRKT-P/T ; ABS NATURAL	1	
KNOB-LEVER ; ABS BLK	2	
KNOB-DSL ; ABS BLK	1	
KLINK-TAPE SEL ; ABS BLK	1	
LINK-RECORD ; PC NATURAL	1	
CHASSIS-RECORD ; ABS NATURAL	1	
SCREW-TAP TITE SPEC ; S-3 x 8 FZY	1	
SCREW-RH ; +M3 x 8 FE FZY	2	
WHEEL-DRUM ; ABS BLK	1	
SCREW-RH ; +M2.6 x 5 FE FZY	1	
POINTER ; PE WHT	1	
CHASSIS-MAIN ; ABS BLK	1	
KNOB-TUNING ; ABS BLK	1	
HOLDER-LCD ; ABS BLK	1	
DECK-CD ; CMS-V10/A	1	
RUBBER-CD ; SI RUBBER	4	
SHAFT-CD ; FE FZY 2.6 x 10.5	4	
CAP-P/U ; SUS	1	
SCREW-TAP, BH ; 2-2 x 5 FE FZW	4	

NO.	CODE NO.	D
43	16021-505-810	CHASSIS-CI
44	16604-539-410	HOLDER-CD
45	17558-230-101	SCREW-TAP
46	13564-601-060	LEAF-SWITC
47	17158-220-103	SCREW-TAP
48	16674-586-010	SPRING-CD
49	17642-544-310	DOOR-CD ; /
50	17008-120-032	SCREW-PH
51	16603-511-810	HOLDER-CH
52	16034-504-210	HOLDER CH
53	14014-500-600	MAGNET-CH
54	16623-504-420	BRKT-CHUC
55	16000-535-310	CABINET-BA
56	13059-101-201	LEAD-FASTE
57	17624-661-210	KNOB-VOLU
58	14509-316-050	ANT-ROD ; 5
59	17048-130-081	SCREW-PH
60	17663-508-110	HANDLE ; AE
61	17654-566-310	WINDOW-SC
62	16674-560-220	SPRING-BAT
63	16404-528-710	SPRING-BAT
64	17642-546-710	LID-BATTER
65	17448-130-201	SCREW-TAP
67	15684-566-410	HEAT-SINK ;
68	15684-507-840	HEAT-SINK ;
69	18154-597-710	DECORATIO
70	18114-576-410	STICKER-RE

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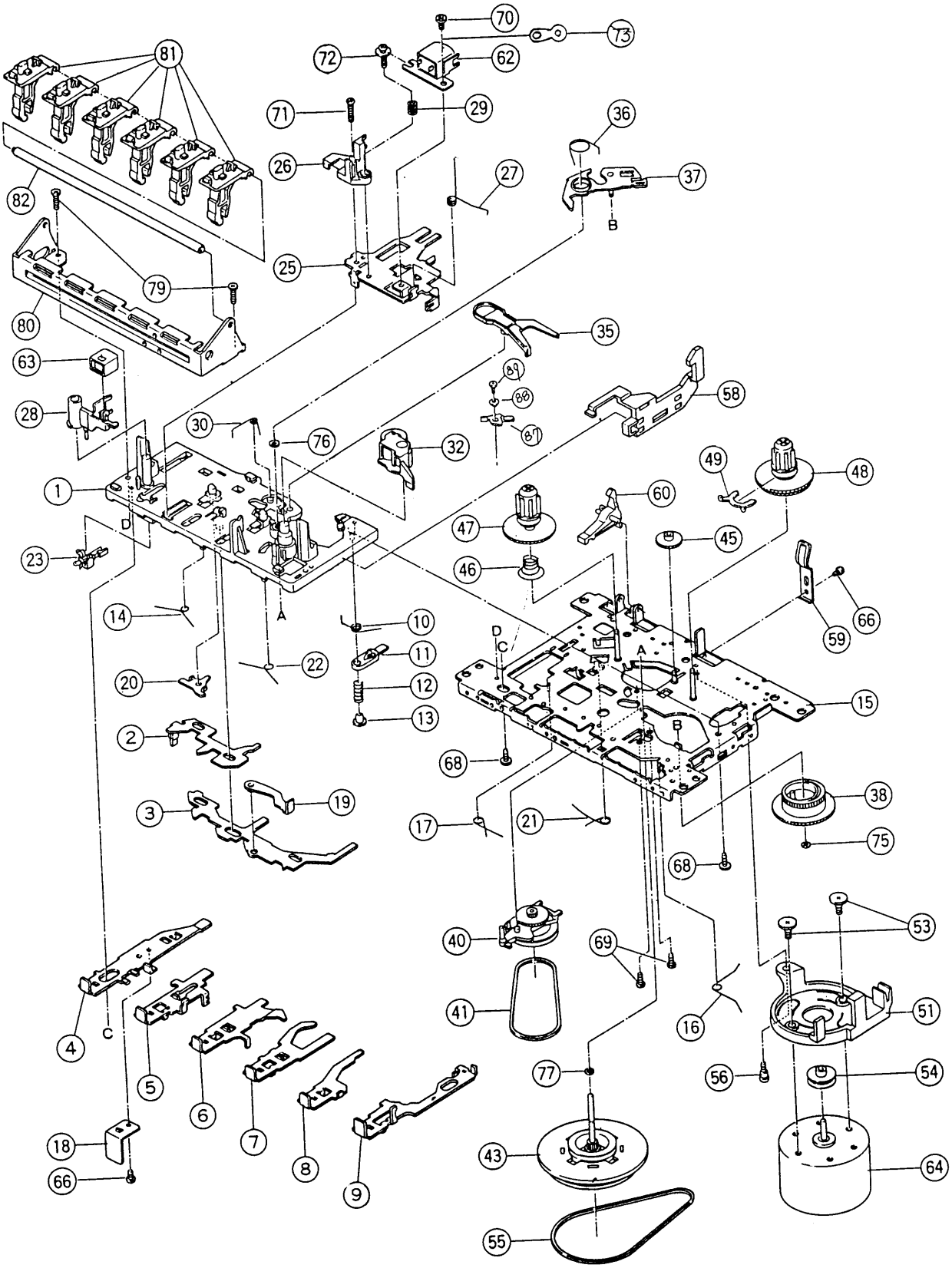
NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
43	16021-505-810	CHASSIS-CD ; ABS BLK	1	
44	16604-539-410	HOLDER-CD EJECT ; ACETAL BLK	1	
45	17558-230-101	SCREW-TAP BH SPEC ; 2S-3 x 10 FE FZY	2	
46	13564-601-060	LEAF-SWITCH ; MSW-0080 CNBKP	1	
47	17158-220-103	SCREW-TAP, BH ; 2-2 x 10 FE FZB	1	
48	16674-586-010	SPRING-CD DOOR ; SWP D = 1.0	1	
49	17642-544-310	DOOR-CD ; ABS	1	
50	17008-120-032	SCREW-PH ; +M2 x 3 FE FZW	1	
51	16603-511-810	HOLDER-CHUCK PLATE ; ABS BLK	1	
52	16034-504-210	HOLDER CHUCK ; ABS BLK	1	
53	14014-500-600	MAGNET-CHUCK ; SR FERRITE 6P 250 + – 20G	1	
54	16623-504-420	BRKT-CHUCK ; SBHG-1 T0.5	1	
55	16000-535-310	CABINET-BACK ; HIPS BLK	1	
56	13059-101-201	LEAD-FASTEN ; 110 REC 200 RED	1	
57	17624-661-210	KNOB-VOLUME ; ABS BLK	2	
58	14509-316-050	ANT-ROD ; 5.2PI 728MM 4S	1	
59	17048-130-081	SCREW-PH ; +M3 x 8 FE FZY	1	
60	17663-508-110	HANDLE ; ABS BLACK	1	
61	17654-566-310	WINDOW-SCALE ; PC CLEAR	1	
62	16674-560-220	SPRING-BATTERY, K ; SWP PI1.0	1	
63	16404-528-710	SPRING-BATTERY " + , – " ; SWP D = 1.0	1	
64	17642-546-710	LID-BATTERY ; HIPS BLK	1	
65	17448-130-201	SCREW-TAP TITE BH ; B-3 x 20 FE FZY	9	
67	15684-566-410	HEAT-SINK ; EXTR WHT 17M	1	
68	15684-507-840	HEAT-SINK ; ALP T1	1	
69	18154-597-710	DECORATION-FOOT ; FASCAL GOLD	2	
70	18114-576-410	STICKER-REFLECTOR ; ART-PAPER	1	

DECK ASSY ; ADR1516FR (14929-104-110)

NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
23	10000-268-023	LEAF SWITCH ; MSW-1541T	1	
28	10000-268-033	MG ARM ; 1921-03-05	1	
32	10000-268-035	PINCH ROLLER ARM ASSY ; 1921-04-301	1	
35	10000-268-038	SENSING LEVER ; 1921-26-04	1	
38	10000-268-047	CAM GEAR ; 1921-26-02	1	
40	10000-268-042	RF CLUTCH ASSY ; 1921-07-301	1	
41	10000-268-040	RF BELT ; 1921-07-03	1	
43	10000-268-044	FLYWHEEL ASSY ; 1921-09-303	1	
45	10000-268-049	FF GEAR ; 1821-10-70	1	
47	10000-268-051	SUPPLY REEL ASSY ; 1921-05-304	1	
48	10000-268-052	TAKE UP REEL ASSY ; 1921-05-303	1	
49	10000-268-053	SENSER ; 1921-05-06	1	
54	10000-268-054	MOTOR PULLEY ; 1921-12-01	1	
55	10000-268-055	MAIN BELT ; 1921-09-04	1	
58	10000-268-062	EJECT SLIDE LEVER ; 1921-13-02	1	
59	10000-268-064	PACK SPRING ; 1821-10-93	1	
60	10000-186-053	REC SAFETY LEVER ; 1821-10-69	1	
62	10000-523-008	RP HEAD ; MS15R-AA2N1	1	
63	10000-542-002	E-HEAD ; PHK380-MS16A	1	
64	10000-502-006	MOTOR ; EG530AD2B	1	
81	10000-186-093	KNOB BASE (TN21F) ; 1821-31-07	6	

* Parts which are not described in the DECK list are not serviceable.
  If you need any other parts except those described, apply DECK ass'y.

3. CASSETTE DECK (ADR1516FR)



For Service Manuals
MAURITRON SERVICES
8 Cherry Tree Road, Chinnor
Oxfordshire, OX9 4QY.
Tel (01844) 351694
Fax (01844) 352554
email:- mauritron@dial.pipex.com

■ PARTS LIST

⚠ indicates parts for circuit safe guarding purpose. Therefore, when replacing, be sure to use specified parts only.

1. RADIO CASSETTE SECTION

LOCATION NO.	CODE NO.	DESCRIPTION & SPECIFICATION	REMARK
IC401	12119-101-290	IC-POWER AMP ; TA8207K	
IC201	12119-102-050	IC-EQ ; BA3312N	
IC101	12119-101-360	IC-TUNER ; TA8167N	
Q503	12149-401-900	TRANSISTOR ; KSD882-O	⚠
Q501	12149-101-520	TRANSISTOR ; KSA733-Y	
Q301	12149-301-840	TRANSISTOR ; KSC900-L	
Q601, 201	12149-301-900	TRANSISTOR ; KSC945-Y	
Q502, 302	12149-301-930	TRANSISTOR ; KSC1008-Y	
Q401, 451	12159-301-790	TR DIGITAL ; KSR1009	
Q101	12159-301-800	TR DIGITAL ; KSR1007	
D601 ~ 604	12169-201-090	DIODE-RECTIFIER ; 1N4002	⚠
D2	12169-501-160	DIODE-AFC ; KS3302	
D501, 502	12169-404-830	DIODE-ZENER ; 500MW UZ-8.2BSC	⚠
D301 ~ 303, 503	12169-301-290	DIODE-SW ; 1SS53/1N4148 CT : 6PF	
D504, 1	12169-301-290	DIODE-SW ; 1SS53/1N4148 CT : 6PF	
L3	12429-508-100	COIL-CHOKE ; 10 μH	
L2	12450-315-311	FM OSC COIL ; 0.5PI 0.1 μH 1.7/8T	FM OSC COIL
L1	12601-051-216	COIL-H.SPRING ; 4T R7P3R5D CW CLS	FM RF COIL
T301	12619-012-811	COIL-SEVEN CAN ; 1R65HH I-BIAS	RECORD BIAS
T3	12619-135-067	COIL-SEVEN CAN ; FM-DET 0.12 ø 12T PINK	FM DET COIL
T1	12739-202-010	TRANS-IF FM1 ; 7M/M CAN	FM IFT
T2	12749-202-130	TRANS-IF, AM, A ; 7M/M CAN	AM IFT
TP1, 2	13124-100-710	TAP-STUD ; 0.5T SPC1 5T2	
VOLUME	11209-804-020	VR-DOUBLE ; RK16K12A0 0Q2 53B	
TONE	11219-149-010	VR-DOUBLE ; RK16K12L0 A02 53A	
C410	11609-154-332	C-ELECTROLYTIC ; 3300 μF/25V 16 x 31.5MM	⚠
J401	13339-101-502	JACK-HEADPHONE ; SHQ9085-01-142 (GRN)	
S3	13529-920-210	SW-PUSH ; R2320658	TAPE SEL.
POWER, STEREO	12309-115-330	LED ; KLR-124	
MODE, PROGRAM,	13559-901-100	SWITCH-TACT ; SKHVBE029A	
BACK, NEXT	13559-901-100	SWITCH-TACT ; SKHVBE029A	
PLAY, STOP,	13559-901-100	SWITCH-TACT ; SKHVBE029A	
DISPLAY, +10	13559-901-100	SWITCH-TACT ; SKHVBE029A	
SVR1	11249-102-034	VR-SEMI ; TAPE-H ; DVN-DJA A03B14 (10K)	FM-STEREO
CF101	14529-303-061	FILTER-CERAMIC ; SFE-10.7MA5-M	
CF102	14529-315-010	CERAMIC-FILTER ; SFU 455B	OPTIONAL
CF102	14529-302-130	CERAMIC-FILTER, AM ; SFU 465B	OPTIONAL
BPF	14529-403-010	FILTER-L.C ; PFW-B4	
CON7	13349-512-561	CONNECTOR-WAFER ; STICK 5267-02A 2P-TYPE	
CON2, 4, 6	13349-512-562	CONNECTOR-WAFER ; STICK 5267-04A 4P-TYPE	
CON3	13349-512-565	CONNECTOR-WAFER ; STICK 5267-06A 6P-TYPE	
CON1	13349-527-502	CONNECTOR-WAFER ; STICK 5267-03A 3P	
CON10	13349-168-071	CONNECTOR-WAFER ; 52084-0710B	

LOCATION NO.	CODE NO.	DESCRIPTION & SPECIFICATION	REMARK
F701, 702	13164-550-010	CLIP-FUSE ; FC51E	OPTIONAL
S4	13549-801-370	LEVER SWITCH ; T00630003	FUNCTION
R/P	13519-930-480	SLIDE SW ; 6C-2P 00620144 (NONE-SHORT)	R/P SWITCH
V/SEL	13599-502-020	VOLT SELECT ; PCB 00120353A (354) 110/220V	⚠ OPTIONAL
V/SEL	13599-502-050	VOLT SELECT ; PCB 00120353G1 110-127V/220-240V	⚠ OPTIONAL
V/SEL	13599-502-060	VOLTAGE SELECTOR ; PCB 00120353L 120/220V	⚠ OPTIONAL
P/T	12869-220-620	POWER-TRANS ; EI48 x 18 220/120V 60Hz UL	⚠ OPTIONAL
P/T	12869-220-630	POWER-TRANS ; EI48 x 18 220V 50Hz VDE	⚠ OPTIONAL
P/T	12869-220-640	TRANS-POWER ; EI48 x 18 110/220V KS	⚠ OPTIONAL
P/T	12869-220-650	TRANS-POWER ; EI48 x 18 115/230V	⚠ OPTIONAL
P/T	12869-220-660	TRANS-POWER ; EI48 x 18 240V BS	⚠ OPTIONAL
P/T	12869-220-670	TRANS-POWER ; EI48 x 18 120V UL	⚠ OPTIONAL
J601	13354-501-310	SOCKET-2P, SW(EP) ; HSC1463-01-0101 (PIN)	⚠ OPTIONAL
J601	13354-501-320	SOCKET-2P, SW(CP) ; HSC1466-01-0101 (PIN)	⚠ OPTIONAL

(1) FM/AM OPTIONAL

LOCATION NO.	CODE NO.	DESCRIPTION & SPECIFICATION	REMARK
PVC1	11819-309-510	VARICON-POLY ; P2S-22BGLT, A/C-54	
L103	12513-249-627	COIL-AM ANT ASSY ; PI 8 x 60 570 µH	AM ANT COIL
T102	12619-058-603	COIL-AM OSC ; 290 µH	AM OSC COIL
S1	13549-801-210	SWITCH-LEVER ; 00221013S 2C-2P	BAND

(2) FM/MW/LW OPTIONAL

LOCATION NO.	CODE NO.	DESCRIPTION & SPECIFICATION	REMARK
PVC1	11819-309-380	VARICON-POLY ; P2S-22BPT A/C-H	
L102, L103	12514-281-577	COIL-ANT ASSY ; 285 µH/3.5MH 8 x 100 LW/MW	MW/LW ANT
T101	12619-050-703	COIL-SEVEN CAN ; AQ 200 µH FMW	MW OSC COIL
T102	12619-177-902	COIL-SEVEN CAN ; AQ 560 µH FLW BRN	LW OSC COIL
S1	13549-801-310	SWITCH-LEVER ; T0083002 8C-3P A-SHORTING	BAND
CT5, 6	11829-512-030	C-TRIMMER ; TZ03R 20PF	

(3) FM/SW/AM OPTIONAL

LOCATION NO.	CODE NO.	DESCRIPTION & SPECIFICATION	REMARK
PVC1	11819-309-380	VARICON-POLY ; P2S-22BPT A/C-H	
L101	12509-805-020	COIL-ANT, SW ; 9.5M/M	SW ANT COIL
L103	12516-203-376	COIL-ANT ASSY ; 280 µH AR8 x 60 MW/SW	AM ANT COIL
T102	12619-050-703	COIL-SEVEN CAN ; AQ200 µH FMW (TA8167)	AM OSC COIL
T101	12619-173-126	COIL-7 CAN ; 2.73NH AQ FSW GREEN	SW OSC COIL
CT4, 7	11829-512-030	C-TRIMMER ; TZ03R 20PF	

2. CD SECTION

⚠ indicates parts for circuit safe guarding purpose. Therefore, when replacing, be sure to use specified parts only.

LOCATION NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	REMARK
IC0316	12109-303-150	IC-DAC ; KDA0316LD (BULK)	1	
IC5990	12119-203-770	IC-DS PROCESSOR ; KS5990/KS59910	1	
IC8309	12119-203-780	IC-SS PROCESSOR ; KA8309	1	SAMSUNG SSP
IC8309 (OPTIONAL)	12109-323-740	IC-SS PROCESSOR ; CXA1082AQ	1	SONY SSP
IC9201	12119-203-790	IC-RF AMP ; KA9201	1	
IC7777, 7778	12119-202-920	IC-BTL DRIVER ; KA9257	2	
IC7805	12119-601-170	IC-VOLT REGULATOR ; MC78M05	1	
IC3403	12119-401-210	IC-OP AMP ; NJM3403AD	1	
IC7530	12109-303-690	IC-MICOM ; KS56C820-06	1	
Q1701	12149-202-050	TRANSISTOR ; KSB564A-Y	1	
Q1903, 1904, 1906, 1907	12149-301-890	TRANSISTOR ; KSC945-L	5	
Q1909	12149-301-890	TRANSISTOR ; KSC945-L		
Q1501, 1502, 1901, 2000	12159-301-780	TR-DIGITAL ; KSR1003	4	
Q1791, 1792	12159-301-800	TR-DIGITAL ; KSR1007	2	
Q1902	12159-301-330	TR-DIGITAL ; KSR2003	1	
Q1908	12159-301-810	TR-DIGITAL ; KSR2007	1	
D901 ~ 904, 1501 ~ 1504	12169-301-290	DIODE-SW ; 1SS53/1N4148 CT : 6PF	12	
D1901, 1902, 804, 805	12169-301-290	DIODE-SW ; 1SS53/1N4148 CT : 6PF		
L1701, 1601, 1501, 1801	12429-411-109	COIL-CHOKE ; BAL03ST1ROM	4	
L1901	12429-411-101	COIL-CHOKE ; LAL02TB 101K, 100UH	1	
RF229	11058-377-229	R-FUSIBLE ; 1/2T 2.2J	1	⚠
XF1702	14534-504-040	CERAMIC-RESONATOR ; CSA 4.00MG	1	
XF1701	14539-401-050	X-TAL ; HC18U 16.9344MHz	1	
VR1701, 1704, 1705	11249-002-250	VR-SEMI ; VZ067TH T20KB, HDK V-TYPE	3	
VR1703	11249-002-260	VR-SEMI FIXED ; VZ067TH T50KB, HDK V-TYPE	1	
VR1702	11249-002-120	VR-SEMI FIXED ; VZ068TLT 1KB, HDK H-TYPE	1	
LCD	12339-101-900	LCD-CD ; 8174R	1	

■ ABBREVIATION LIST

AC	:	Alternating Current
ADJ	:	ADJustment
AFC	:	Automatic Frequency Control
ALC	:	Automatic Level Control
AM	:	Amplitude Modulation
AMP	:	AMPlifier
ANT	:	ANTenna
ASSY	:	ASSemblY
B	:	Base
BH	:	Bold Head
BLK	:	BLacK
BLU	:	BLUe
BPF	:	Band Pass Filter
BRN	:	BRowN
BRKT	:	BRacKeT
C	:	Collector, Capacitor
CD	:	Compact Disc
CF	:	Ceramic Filter
Ch	:	Channel
cm	:	centimeter
CIRC	:	Cross Interleave Reed solomon Code
CLV	:	Constant Linear Velocity
COL	:	COLon
COM	:	COMmon
CON	:	CONnector
D	:	Depth
D/A	:	Digital to Analog
DAC	:	Digital to Analog Conveter
dB	:	deciBel
DC	:	Direct Current
DET	:	DETector
DEV	:	DEViation
DIV	:	DIVision
DSP	:	Digital Signal Processor
E	:	Emitter
E.F	:	Eight to Fourteen
E-HEAD	:	Erase HEAD
EQ	:	EQualizer
F.Bias	:	Focus Bias
F.E	:	Focus Error
FF	:	Fast Forward
F.FWD	:	Fast ForWarD
Fig	:	Figure
FM	:	Frequency Modulation
FOK	:	Focus OK
FREQ	:	FREQuency
GND	:	GrouND
H	:	Height, High
Hz	:	Hertz
IC	:	Integrated Circuit
IF	:	Intermediate Frequency
IFT	:	Intermediate Frequency Transformer
I/O	:	Input/Output
INTRO	:	INTROduction
KHz	:	KilloHertz
Kg	:	Kilogram
L	:	Left, Low
LCD	:	Liquid Crystal Display
LED	:	Light Emitting Diode
LPF	:	Low Pass Filter
LSI	:	Large Scale Integration
LW	:	Long Wave
MHz	:	MegaHertz
MICOM	:	MICro COMputer
MIN	:	MINute
MIX	:	MIXer
mm	:	millimeter
MOD	:	MODulation
MPX	:	MultiPleX
mV	:	mili Voltage
MW	:	Medium Wave
mW	:	milli Watt
N	:	Negative
NFB	:	Negative FeedBack
nm	:	nano meter
ORG	:	ORanGe
OSC	:	OSCillator
P	:	Point, Positive
PB	:	PlayBack
PCB	:	Printed Circuit Board
PF	:	Pico Farad
P/T	:	Power Transformer
P/U	:	Pick Up
Q'TY	:	QuantiTY
R	:	Right, Resistor
RAM	:	Random Access Memory
REC	:	RECord
REG	:	REGulator
REW	:	REWind
RF	:	Radio Frequency
RH	:	Round Head
ROM	:	Read Only Memory
R/P	:	Record/Play
rpm	:	revolutions per minute
sec	:	second
SEL	:	SELector
SPK	:	SPeaKer
SSG	:	Standard Signal Generator
SSP	:	Servo Signal Processor
ST	:	STereo
SVR	:	Semi Variable Resistor
SW	:	SWitch, Short Wave
SYNC	:	SYNChronous
T.E	:	Tracking Error
TP	:	Test Point
TR	:	TRansistor
TRANS	:	TRANSformer
V	:	Volt
VCO	:	Voltage Controlled Oscillator
Vpp	:	Voltage peak to peak
VR	:	Variable Resistor
VREF	:	REFerence Voltage
V/SEL	:	Voltage SELector
VTVM	:	Vacuum Tube Volt Meter
W	:	Watt, Weight
WHT	:	WHiTe
X-TAL	:	crystal