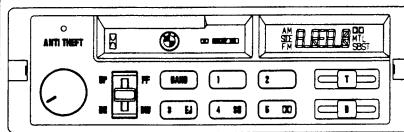


Service Manual



US - Gerät
BMW ANTI-THEFT RADIO

ORDER NO.
CRT 1150

KE-81ZBM-02

US

Note :

- See the separate manual CX-156 (CRT-468) for the cassette mechanism description.
 - Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
 - Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
- BMW No. 88 88 1 600 155

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SPECIFICATIONS

TUNER

FM Receiver

Usable Sensitivity (Load) [30 dB (N + D)/(S + N + D)]	1 µV
Signal/Noise Ratio (1 mV)	65 dB
Overload Signal	1 V
AM Rejection	40 dB
IF Rejection	100 dB
Image Rejection	50 dB
Spurious Rejection	70 dB
Alternate Channel Selectivity	60 dB
Capture Ratio	2 dB
Stereo Separation (1 kHz)	40 dB
Stereo Distortion (1 mv)	0.5%
Frequency Range	87.9 to 107.9 MHz
Intermediate Frequency	10.7 MHz

AM Receiver

Usable Sensitivity [20 dB N/(S + N)]	10 µV
Signal/Noise Ratio (5 mV)	50 dB
Selectivity (± 10 kHz)	100 dB
IF Rejection	100 dB
Image Rejection	60 dB
Distortion (5 mVRF)	0.5%
Frequency Range	530 to 1620 kHz
Intermediate Frequency	450 kHz

WB Receiver

Usable Sensitivity (Load) [20 dB (S + N)/(S + N + D)]	0.3 µV
--	--------

Signal/Noise Ratio (1 mV)	55 dB
Distortion	1.5%
Frequency Range	162.400 to 162.550 MHz (25 kHz Step)

Intermediate Frequency	
1st I.F	10.7 MHz
2nd I.F	450 kHz

Cassette Deck

Wow and Flutter WRMS — JIS	0.07%
Signal/Noise Ratio	50 dB
Dolby NR Effect	10 dB
Separation	50 dB
Cross Talk	55 dB
Distortion	1%
Frequency Response (-3 dB)	
Normal	40 Hz to 15 kHz
Metal	40 Hz to 18 kHz

Audio Control

Tone Control Response	
Treble Boost/Cut	10 kHz
Bass Boost/Cut	100 Hz

Power Amplifier

Power Output ($R_L = 4 \Omega$, $Vcc = 14.4 V$)	
10% THD	16 W/Ch
1% THD	13 W/Ch
THD ($R_L = 4 \Omega$, $Vcc = 14.4 V$)	
$P_o = 1 W$	0.07%
Frequency Response (± 3 dB)	20 Hz to 40 kHz
Signal/Noise Ratio	65 dB

NOTE: Specifications are subject to change without notice.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.

PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada

PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium

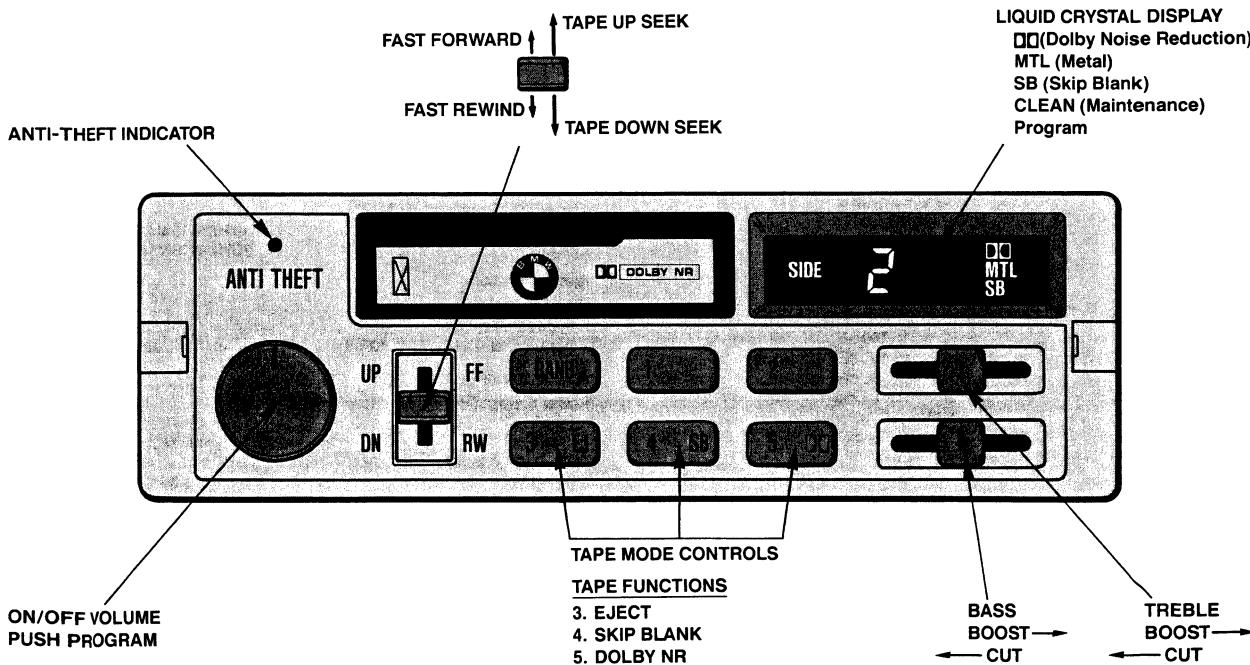
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

1. ANTI-THEFT

The BMW anti-theft radio circuitry is designed to essentially render your radio unsaleable if it is stolen. If the radio is subsequently electrically reconnected, it will not operate until a five-digit security code assigned to your radio is entered. The anti-theft features and operation are as follows:

1. After the ignition key is removed, the red "anti-theft" LED will continuously flash, drawing attention to this feature.
 2. Should anyone, such as a thief, touch any pushbutton on the radio after the key is removed, the anti-theft inscription will flash and a warning tone will sound for 5 minutes or until the ignition is turned on.
 3. If the voltage supplied to the radio drops below a preset value due to a weakened battery, repair work, or removal of the radio (by a thief), the radio will be inoperative once voltage is restored. This condition will be indicated by the word "code" being shown on the display.
 4. The proper 5 digit code shown on the TWO CARDS SUPPLIED TO YOU must then be entered (using the proper **number** radio pushbutton selectors) when the radio is on and the display shows "code". If the correct code is not entered in three successive tries, the radio will not accept entry until the radio has been left **on** for one hour with the ignition on.
- IMPORTANT:** When entering the 5 digit code number, be sure to complete sequence numbering of that 5 digit code. For example: Code No. sequence is 43215 and you mistakenly enter **42** instead of **43**, continue the code number sequence of 215 to complete that entry. In this case, a "beep" will sound to signal input of the 5-digit code, the word "code" will remain on the display, and the radio will not operate. Re-enter the correct number sequence of 43215 and operation of the radio will continue. The likelihood of guessing the correct code is extremely remote. The radio is, therefore, unsaleable to a thief.
- NOTE:** If an audible beep is heard while entering the 5-digit code, STOP immediately! Begin entering the code again, starting with the first number of the 5-digit code.
5. The code card should be placed in your wallet, or with the vehicle title papers for security as deemed necessary by your individual needs. Do not leave your code cards in vehicle.
 6. Should radio or electrical repairs become necessary, please give the repairing facility the radio code number. If you do not, only authorized BMW dealer personnel can obtain the code from BMW.
 7. Should you lose your code cards, contact the nearest BMW dealer who will then obtain your code from BMW. You may be charged for removal of the radio to ascertain the radio chassis number.
 8. **WARNING:** FOR YOUR PROTECTION, CODES WILL NOT BE GIVEN OUT TO ANYONE UNDER ANY CIRCUMSTANCES OTHER THAN AUTHORIZED BMW DEALER PERSONNEL AFTER PROOF OF VEHICLE OWNERSHIP AND PROPER IDENTIFICATION IS ESTABLISHED.

2. USING THE TAPE DECK



1. CASSETTE OPERATION

To use the cassette, the radio must be in "ON" position. Inserting a tape cassette automatically switches the unit and dual function controls from the radio to the tape mode.

2. LOGIC CONTROL

This radio utilizes logic circuitry that automatically determines the correct direction for fast forward and rewind. A standard cassette has two sides that are played in either direction. When a cassette is playing, the top side will be indicated on the display as program "SIDE 1"; the bottom side will be program "SIDE 2".

3. FAST FORWARD/REWIND

TAPE SEEK

The fast forward/rewind lever employs 2-step operation. Raising the lever one step is used for fast forward, while lowering the lever one step is used for fast rewind. Fast forward/rewind can be cancelled by raising or lowering the lever again one step. Raising or lowering the fast forward/rewind lever two steps (as far as it will go) activates the tape seek operation. "SEEK" will appear on the Liquid Crystal Display. Raising the lever automatically moves the tape to the next selection on the tape for playback. Lowering the lever returns the tape to the beginning of the current selection for playback.

Tape "SEEK" will only function if four seconds of silence exist between selections. However, excessive record player stylus noise, due to dust or scratches on the record on home-recorded tapes may interfere with these functions.

The cassette automatically ejects from the unit if tape setting operations cannot be completed within a few seconds. This may be caused by a faulty or damaged cassette. Determine the cause of the problem or use a different cassette.

4. PROGRAM

Press the volume knob to reverse the current direction of tape transport. The tape will automatically reverse when the end of either side is reached.

5. DOLBY NOISE REDUCTION



Dolby Noise Reduction reduces the level of "tape hiss" inherent in cassettes by "encoding" the tape. Use of the Dolby NR function with non-Dolby NR tapes will decrease high frequency response. By not using the Dolby NR function with Dolby NR encoded tapes, the high frequency response will be intensified. The symbol "DD" will appear on the display when the Dolby NR button is pressed.

6. TAPE EJECT



Press the eject (EJ) button to eject tape cassette and return to the radio mode.

7. AUTOMATIC EQUALIZATION

The playback equalization of NORMAL tapes differs from CHROME (CrO_2), and METAL tapes. When a high biased tape (including metal) is inserted, the unit will automatically change to the correct equalization level and "MTL" will be indicated on the liquid crystal display.

8. SKIP BLANK (SB)



The skip blank function causes the unit to automatically advance the tape to the next recorded portion when a blank section of tape exceeds approximately 12 seconds. When a long unrecorded portion is detected at the end of a tape, the unit advances the tape to the end and then switches to the other side of the tape. The indicator "SB" appears on the display when the skip blank (SB) button is pressed. Additionally "SEEK" will be displayed while the tape is automatically advanced during skip blank operation.

9. IGNITION "KEY OFF" PAUSE

When the ignition is turned off while a tape is playing, the cartridge will automatically enter the pause mode (pinch roller release). When the ignition is turned on the unit will return to the normal play mode. When the unit is in the pause mode it will not accept another cassette.

10. AUTOMATIC TAPE SLACK CANCELLER (ATSC)

The automatic tape slack canceller removes any slack in the cassette tape before play to protect and extend the life of your tapes.

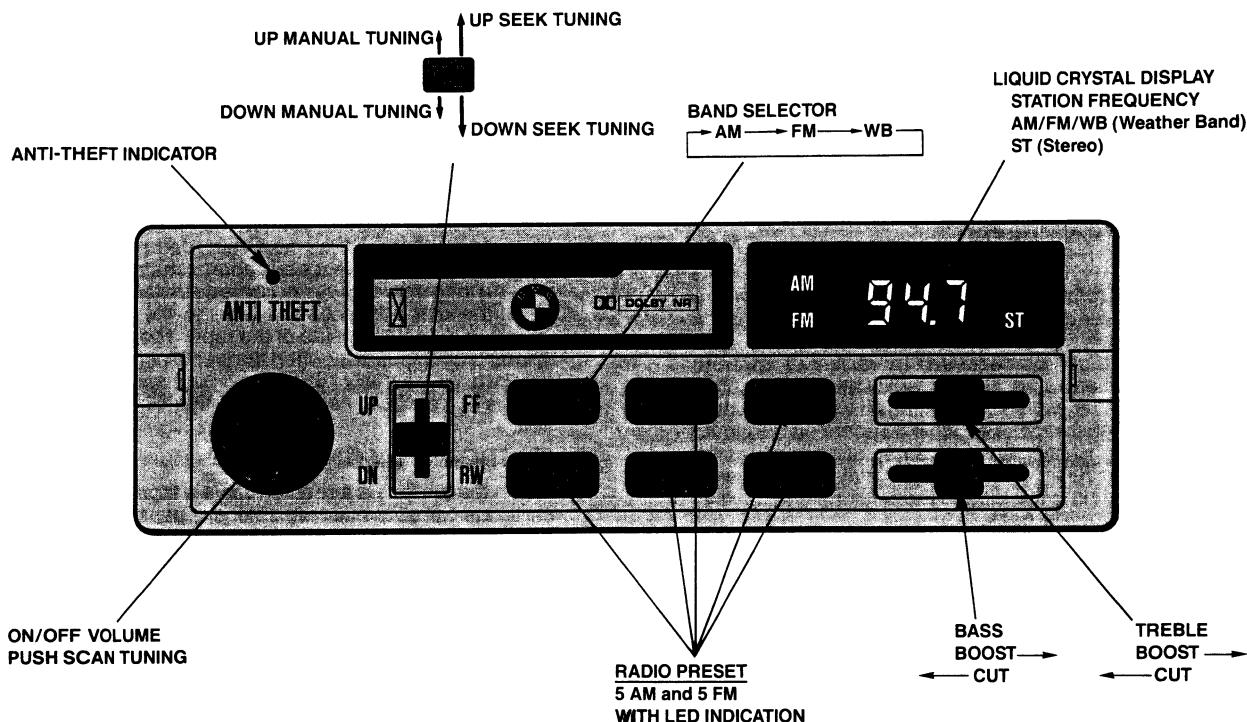
11. ROTATING TAPE HEAD

The rotating tape head in your tape cassette player ensures accurate horizontal tape alignment in both directions for optimum sound level reproduction and frequency response.

NOTE:

Your BMW ANTI-THEFT Radio contains a full logic computer controlled 3-motor drive which controls the automatic tape slack canceller (ATSC) and rotating tape head mechanism. During cassette tape loading/unloading or tape transport directional changes the operation of the motor drive emits an audible "precision like" mechanical sound which indicates normal tape cassette player operation.

3. USING THE RADIO



1. AM/FM/WB (Weather Band)

Pressing the **BAND** button causes "AM", "FM" or "WB" to appear on the display. The currently tuned frequency is also displayed when AM or FM is selected. "WB" indicates that the WB band is selected, and a weather broadcast frequency is automatically tuned without display of the frequency. A "beep" sounds if there are no weather band broadcasts available for reception. Manual tuning and seek tuning operations using the tuning lever can be employed to change to a frequency other than the one automatically tuned.

2. MANUAL/SEEK TUNING

The tuning lever employs 2-step operation. Raising or lowering the lever one step is used for manual tuning. Raising the lever increases the frequency, while lowering the lever decreases the frequency. Raising or lowering the tuning lever two steps (as far as it will go) activates the seek tuning operation. Raising the lever automatically tunes and locks onto the next higher receivable broadcast frequency, while lowering the lever tunes and locks onto the next lower receivable broadcast frequency.

3. SCAN TUNING

When the (on/off) volume control knob is pressed, scanning begins upscale from station to station, pausing seven seconds at each medium to strong frequency. Scanning stops when the volume knob is pressed again during the seven second pause.

4. STEREO

When a stereo station is received, the "ST" indicator will light up on the display. It will flash when the signal strength diminishes.

5. AUTOMATIC LOCAL/DISTANCE SWITCHING

New electronic circuitry automatically selects the local or distance mode for the best reception and eliminates the need for manual switching.

6. FM RECEPTION

FM reception will occasionally exhibit hissing and fluttering noises due to signal reflections or blockage by hills or tall buildings. FM signals strength diminishes rapidly after approximately 25 miles from the transmitter.

7. PROGRAMMING OR RE-PROGRAMMING PRESET RADIO STATIONS

- Tune in the desired radio station.
- Push the desired preset station selection for 1.5 seconds and an audible "beep" will sound indicating that the frequency has been memorized.
- Repeat this procedure for the remaining preset station selectors on both the AM and FM bands.

8. PRESET STATION INDICATORS

Each of the preset buttons has its own built-in LED. Pressing a preset button causes the color of the corresponding LED to change from orange to green to indicate selection of that preset frequency.

NOTE:

The radio programming controls have dual functions. Each button can be set to one AM and one FM station.

4. DISASSEMBLY

● Case

1. Insert and turn a flat screwdriver to remove case.
2. Raise case to remove.

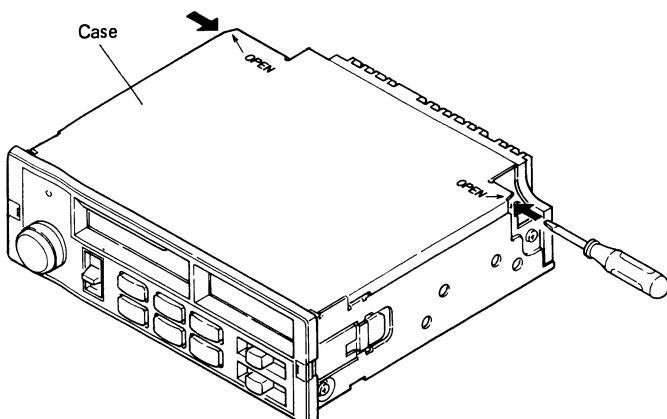


Fig. 1

● Grille Assy

1. Insert a screwdriver and turn it in the arrow direction, then two connector catches come off and the flexible circuit board can be removed.
2. Remove three knobs, and remove two screws.
3. Press tabs at two locations indicated by arrows, and pull out grille assy.

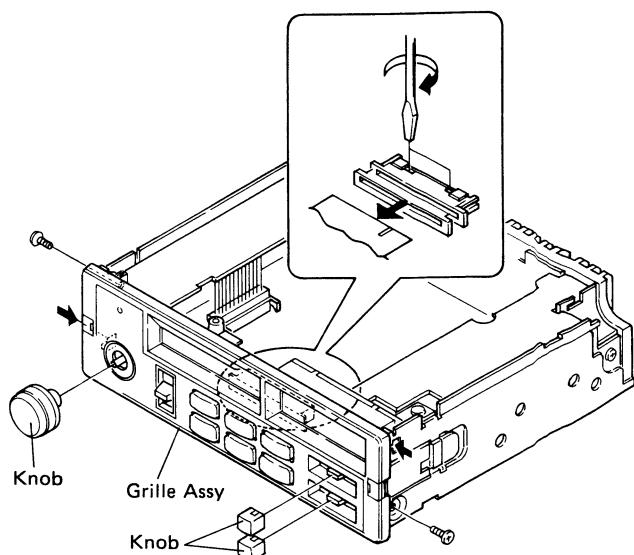


Fig. 3

● Cassette Mechanism Assy

1. Remove four screws, disconnect connector, and then raise cassette mechanism assy to remove.

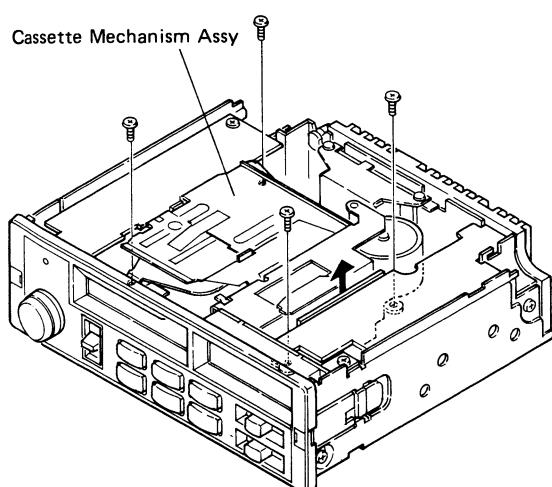


Fig. 2

● Chassis Unit

1. Remove four screws.
2. Unbend tabs at location indicated by arrow.
3. Raise up on tuner amp unit to remove it from chassis unit.

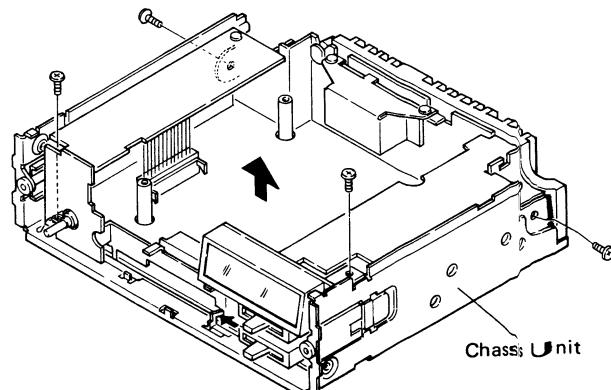


Fig. 4

5. ADJUSTMENT

- Connection Diagram

NOTICE:

Select C1 so that total capacity of 80pF attained from the direction of the receiver jack.

Z: Output impedance of SSG.

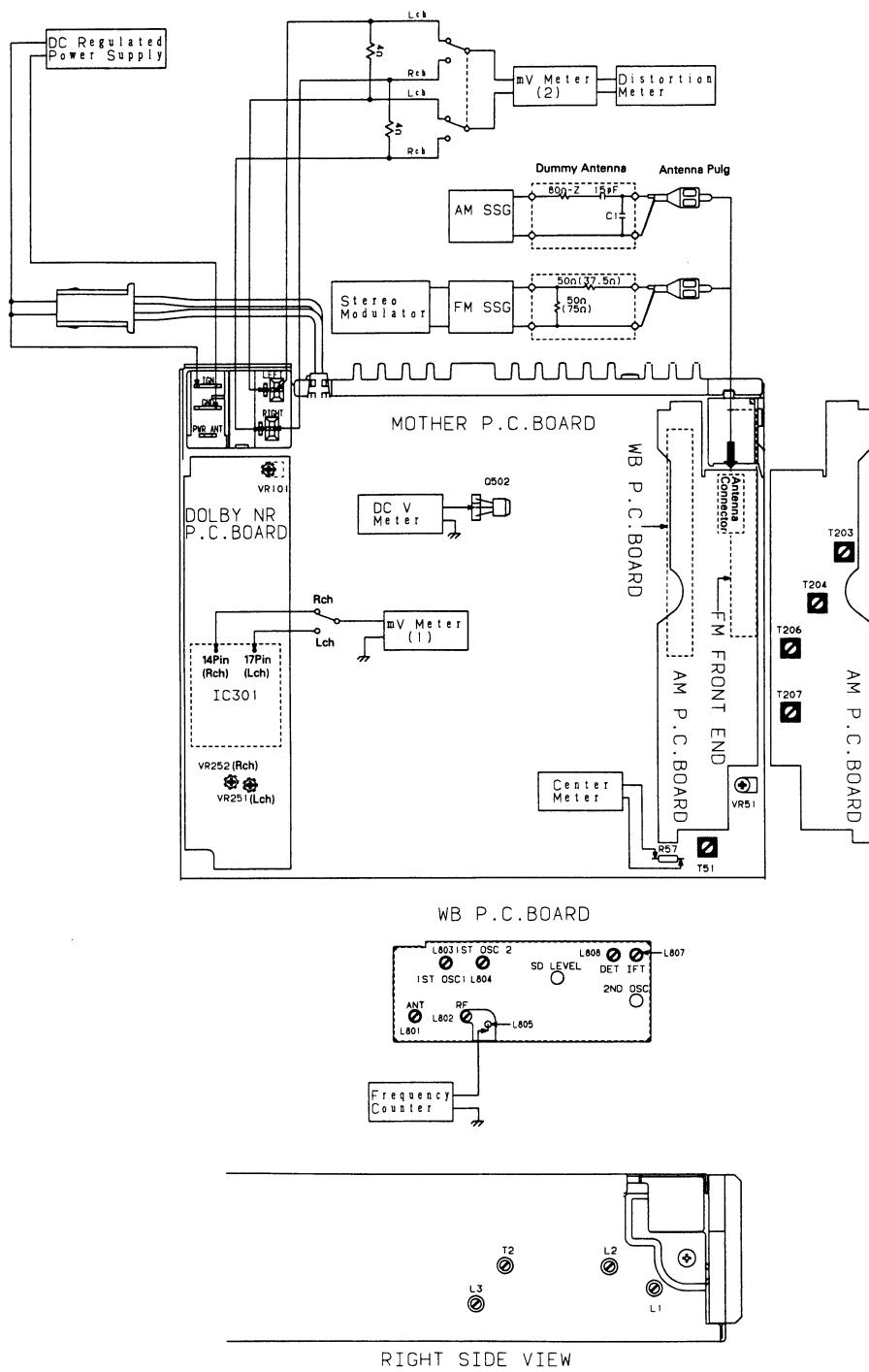


Fig. 5

5. 1 DOLBY NR LEVEL ADJUSTMENT

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150(400Hz, 200nwb/m)	VR251(Lch), VR252(Rch)	mV Meter(1):300mV±1dB (300mV=-8.24dBs) (DOLBY NR Switch:OFF)

5. 2 AM ADJUSTMENT

No.	AM SSG(400Hz, 30%)	Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dB)	
Tun-ing Volt	1	1,620	—	DC V Meter:Less than 8.5V
	2	530	—	DC V Meter:More than 0.8V
Tra-cking	1	600	20	600 T203, T204, T206, T207 mV Meter(2):Maximum
	2	600 1,000 1,400	35	600 1,000 1,400 — The difference between the maximum and minimum output levels at 600kHz, 1,000kHz and 1,400kHz must be 6dB or less.

5. 3 FM ADJUSTMENT * Stereo MOD.: 1kHz, L+R = 90% ,Pilot = 10%

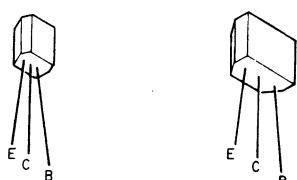
No.	FM SSG(400Hz, 100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
	Frequency (MHz)	Level (dB)			
IF	1	98.1 Unmodulated	60	98.1	T51 Center Meter:0
Tra-cking	1	107.9	10	107.9	L3 DC V Meter:7.0V±0.1V
	2	87.9	10	87.9	— DC V Meter:More than 1.5V
	3	90.1	10	90.1	L1, L2 mV Meter(2):Maximum
	4	98.1	10	98.1	T2 mV Meter(2):Maximum
MPX	1	98.1*	60	98.1	VR101 mV Meter(2):Best separation
ARC	1	98.1*	35	98.1	VR51 mV Meter(2):Separation 5dB

5. 4 WB ADJUSTMENT

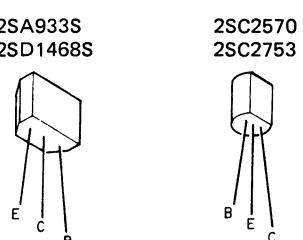
No.	FM SSG(400Hz, 100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
	Frequency (MHz)	Level (dB)			
WB	1				L803 Frequency Counter: 151.775MHz NOTE: After adjusting L803, disconnect frequency counter
	2	162.400	60	WB	Volume control knob mV Meter(2):10dBs
	3	162.400	60	WB	L808 Distortion Meter:Minimum
	4	162.400	60	WB	L807 Distortion Meter:Minimum
	5	Repeat No.3,4 alternately so that the distortion meter indicates minimum.			
	6	162.475	10—15	WB	L801, L802 mV Meter(2):Maximum
	7	162.475	10—15	WB	L804 mV Meter(2):Maximum
	8	If L804 is adjusted more than one quarter turn, repeat No.1.			
	9	Repeat No.6,7 alternately so that the mV meter(2) indicates maximum output.			

● ICs and Transistors

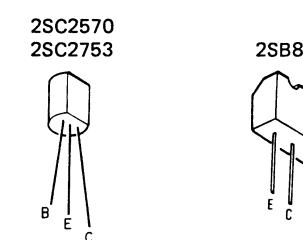
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2SC1740S
2SC2458
2SC3113
2SD1012



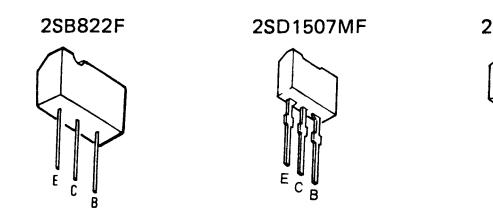
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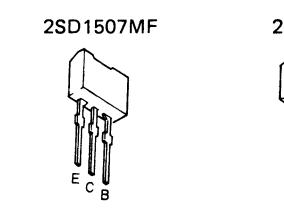
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2SC2753



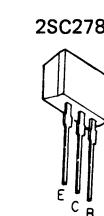
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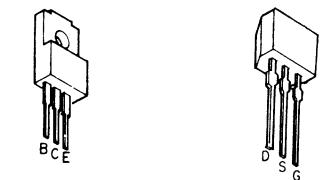
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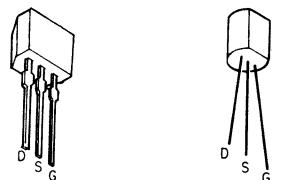
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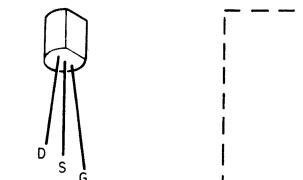
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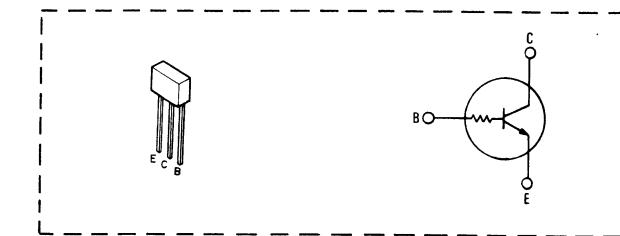
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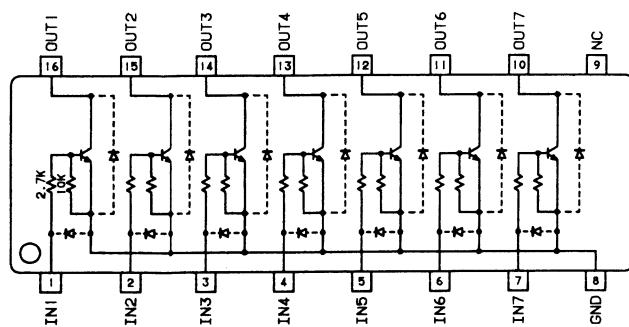
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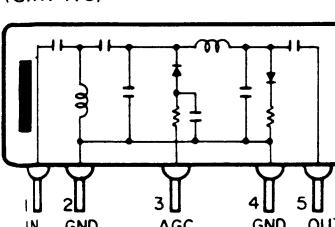
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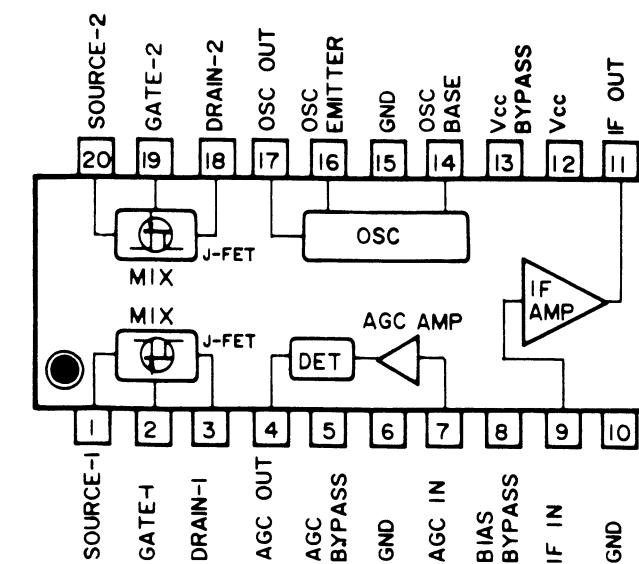
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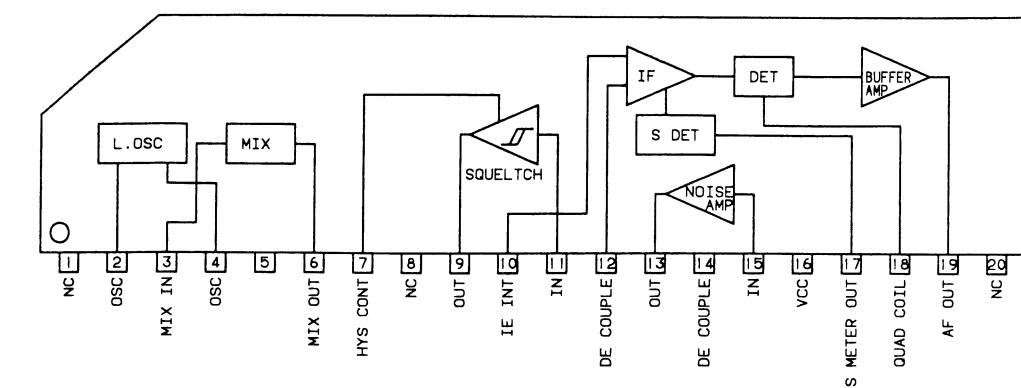
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(CWW-173)



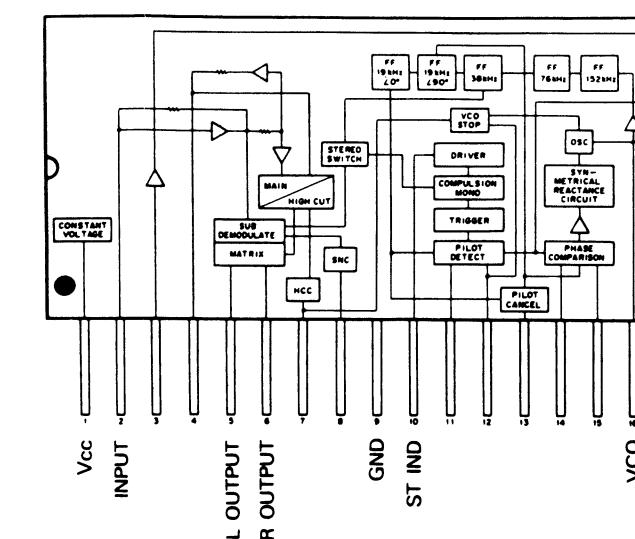
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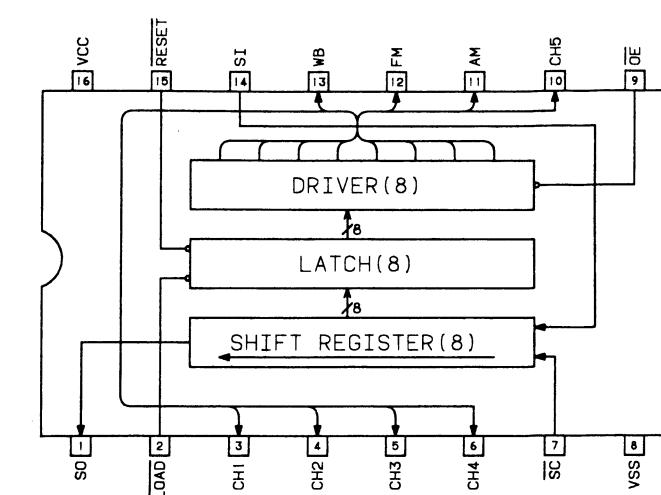
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LA3430P



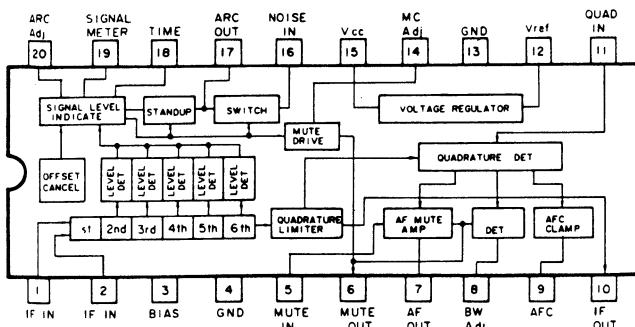
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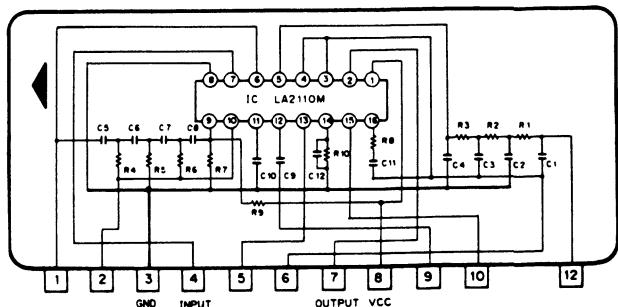
● Pin Function (MB88307)

Pin No	Pin Name	I/O	Function and Operation
1	SO	Output	Serial data output.
2	LOAD	Input	"L" when active and a data load signal is input from the shift register to the latch. "H" when kept.
3	CH1		
4	CH2		
5	CH3		
6	CH4		
10	CH5		
11	AM		
12	FM		
13	WB		
7	SC	Input	Shift clock input.
8	VSS	—	Ground.
9	OE	Input	Output port 3-state control input. "L" when output active. "H" during 3-state output.
14	SI	Input	Serial data input.
15	RESET	Input	Reset input. When "L", output latch becomes "H".
16	VCC	—	Power supply, +5V.

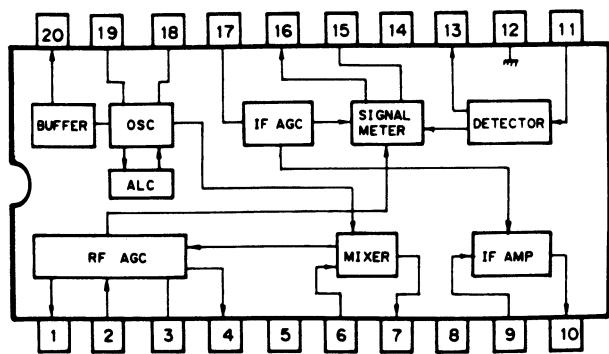
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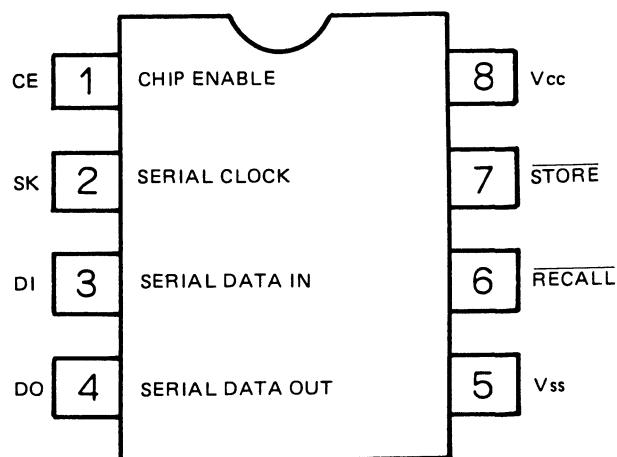
KHA115



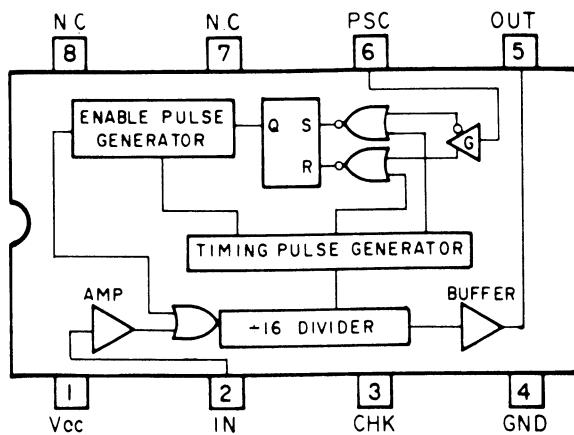
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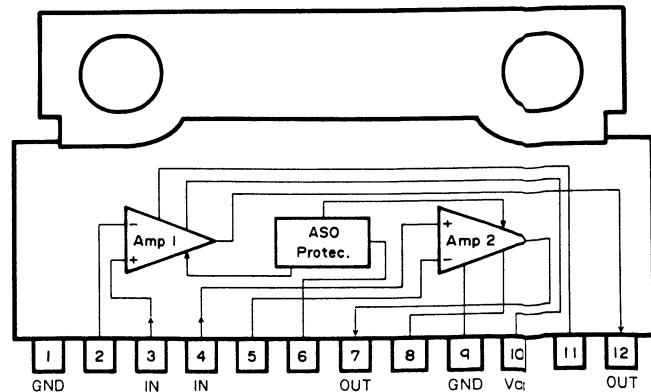
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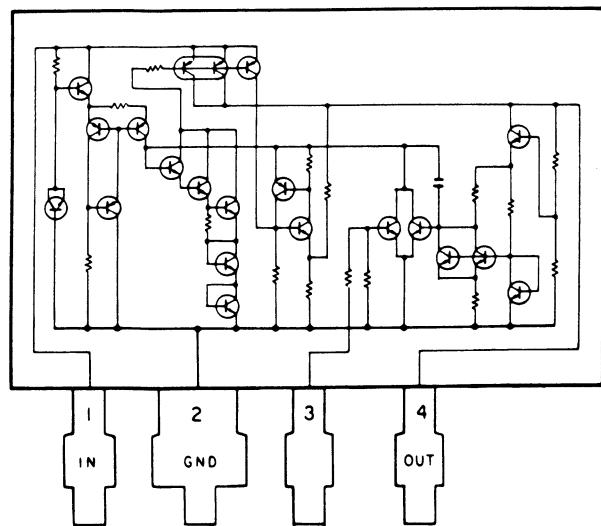
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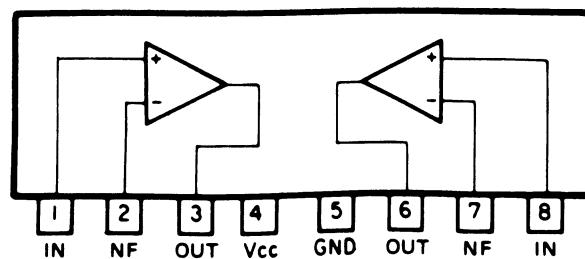
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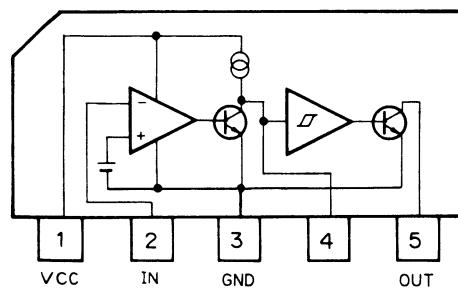
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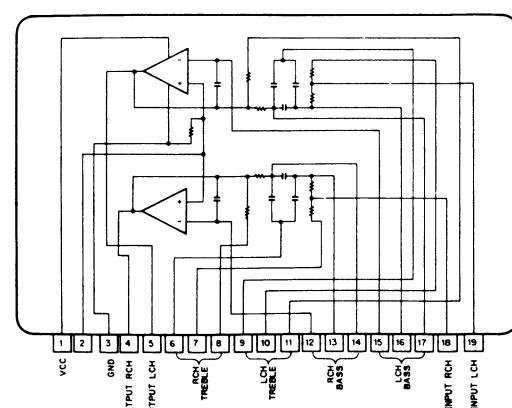
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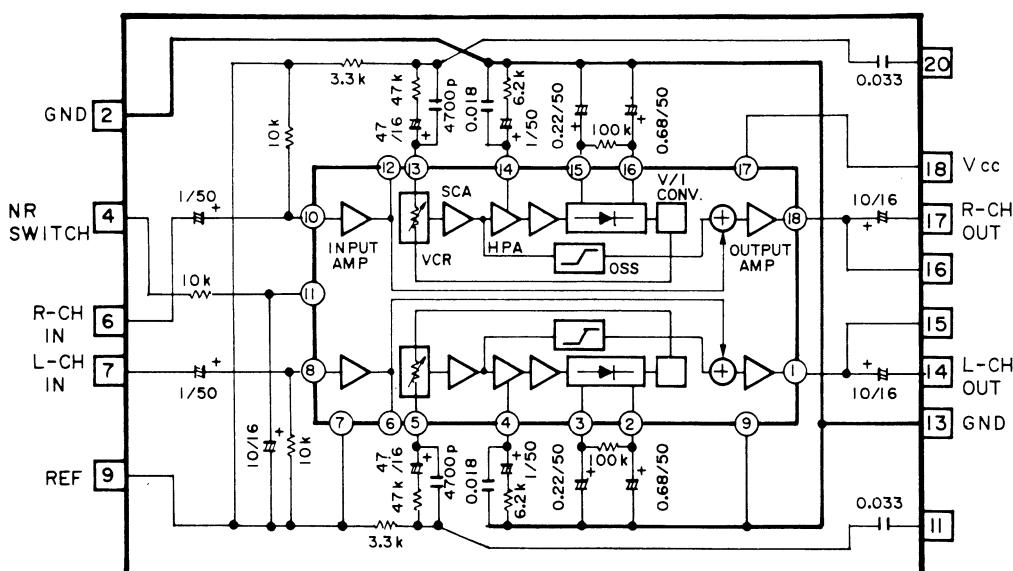
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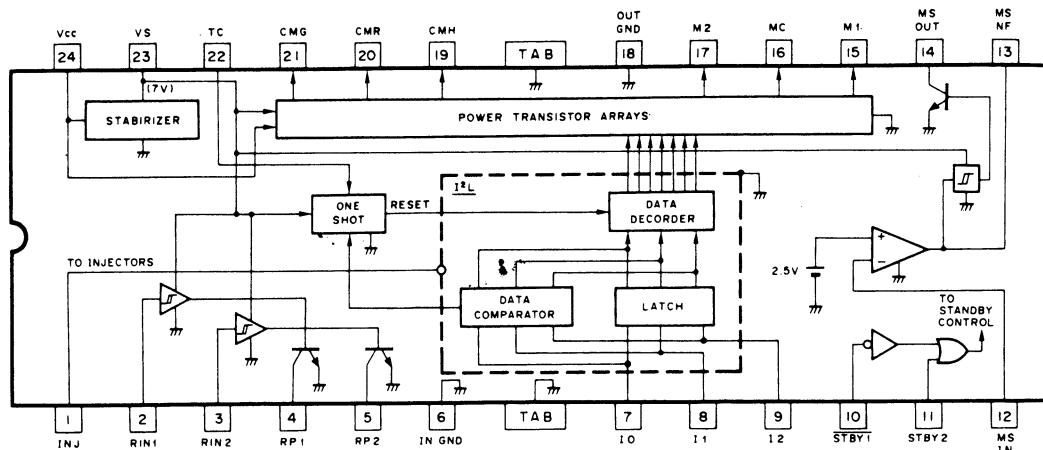
KHA125



NR9200A



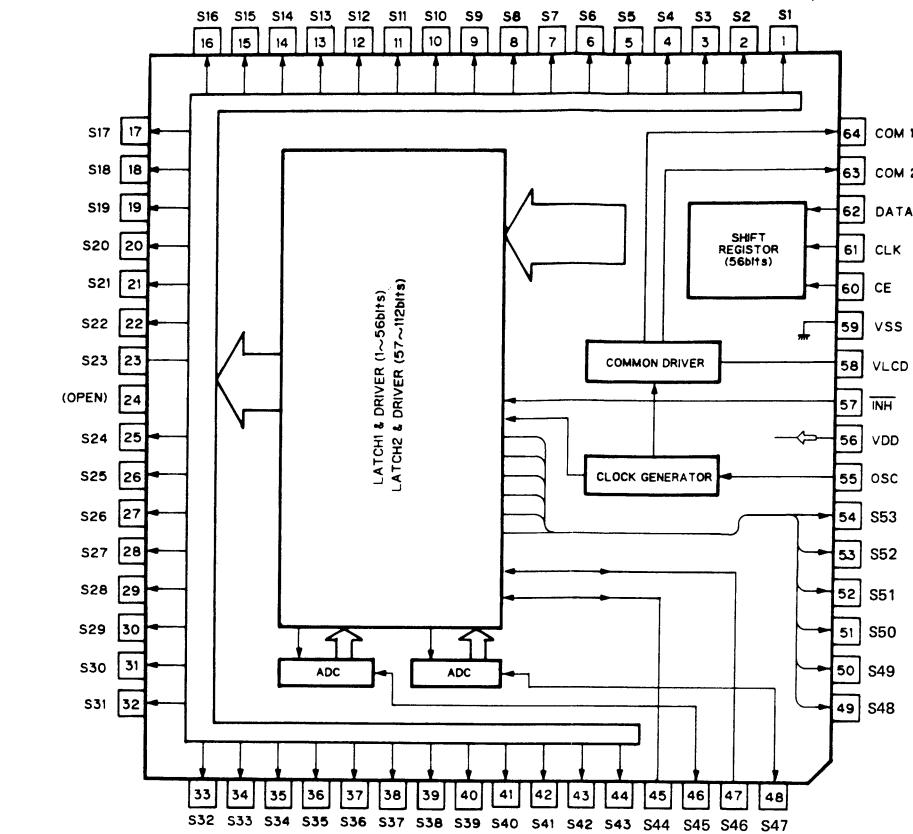
PA3019



● PA3019(Deck Driver) Pin Function

Pin No.	Pin Name	I/O	Function and Operation
1	INJ	Input	Power supply for internal logic ($I^2 L$).
2	R IN 1	Input	Input terminal for Relay Table Rotation Sensor (MR1) signal.
3	R IN 2	Input	Input terminal for Relay Table Rotation Sensor (MR2) signal.
4	RP 1	Output	Waveform output of Relay Sensor Input 1 (2 Pin) signal.
5	RP 2	Output	Waveform output of Relay Sensor Input 2 (3 Pin) signal.
6	IN GND	—	GND terminal of small-signal series.
7	I 0	Input	Logic input terminal for motor control
8	I 1	Input	
9	I 2	Input	
10	STBY 1	Input	Standby control. At active "L" (0.7V or less), the IC current is switched OFF.
11	STBY 2	Input	Standby control. At active "H" (3.5V or more), the IC current is switched OFF.
12	MS IN	Input	Amplifier input (inverted input) terminal for Music Sensing (MS).
13	MS NF	I/O	Output of the MS amplifier and input of the MS Schmitt circuit.
14	MS OUT	Output	Output of Schmitt circuit for MS. MS OUT outputs a pulse when the signal level of the MSNF terminal exceeds 0dBm or enters OPEN status when it is 0 dBm or less.
15	M1	Output	+ terminal drive output of motor M1 for the head table drive.
16	MC	Output	Drive output of the common terminal of motors M1 and M2.
17	M2	Output	+ terminal drive output of drive motor M2 of the FF/REW selecting gear.
18	OUT GND	—	GND terminal of the motor drive circuit.
19	CMH	Output	H (+) terminal drive output of capstan motor M3. Output voltage: During speed control = approx. Vcc-1.7V During LOAD or EJECT = 6.9V
20	CMR	Output	R terminal drive output of capstan motor M3. (1) During speed control: OPEN (2) During LOAD: approx. 0V (3) During EJECT: approx. 7V
21	CMG	Output	GND (-) terminal drive output of capstan motor M3. (1) During speed control: approx. 0V (2) During LOAD/EJECT: OPEN
22	TC	Output	Connecting terminal of capacitor for setting the timer that switches OFF the power transistor for constant motor drive at a change in logic input I0, I1, I2.
23	VS	Output	Power supply for relay table rotation sensor. Approx. 7V.
24	Vcc	Input	Power supply terminal for IC.

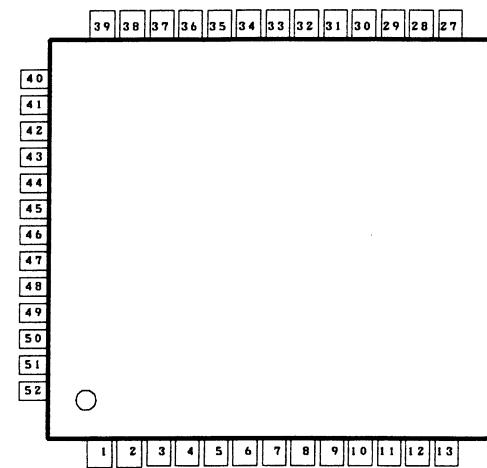
LC7580



● Pin Functions (LC7580)(LCD Driver)

Pin No.	Pin Name	I/O	Function and Operation
1 23	S1 S23	Output	Segment signal output terminal to LCD. LCD display performed using COM1, COM2 matrices.
24	OPEN	—	Not connected.
25 54	S26 S53	Output	Segment signal output terminal to LCD. LCD display performed using COM1, COM2 matrices.
55	OSC	Input	Terminal for clock generator.
56	VDD	Input	Power supply terminal.
57	INH	Input	Input terminal for setting LCD display off.
58	VLCD	Input	Input terminal for setting LCD bias voltage.
59	VSS	—	Power supply terminal. Connect to GND.
60 61 62	CE CLK DATE	Input	Input terminal for serial date transfer.
63	COM2	Output	Common signal terminal to LCD.
64	COM1	Output	Common signal terminal to LCD.

*PD4081D



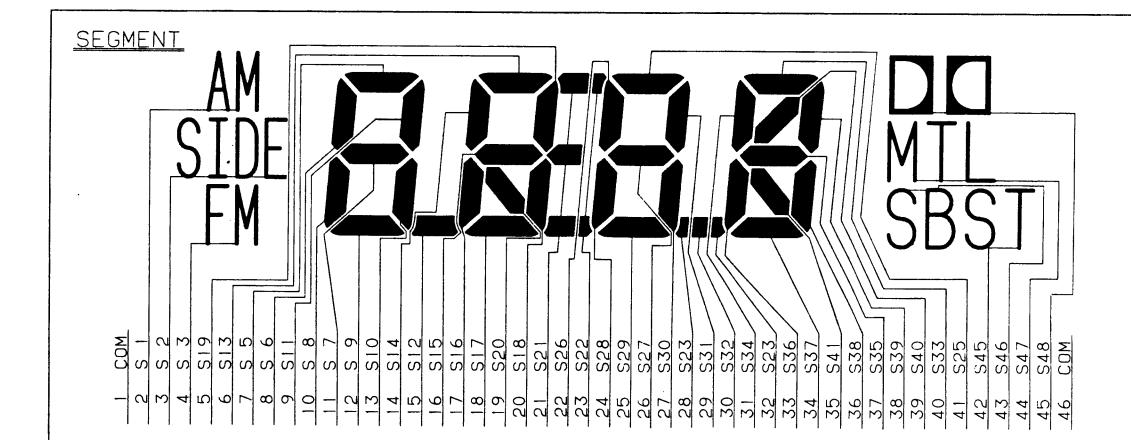
*IC's marked by * are MOS type.
Be careful in handling them because they are very
vulnerable to be damaged by electrostatic induction.*

● Pin Function (PD4081D)

Pin No	Pin Name	I/O	Function and Operation
1	TAPE	Output	Turns TAPE power supply on when "H".
2	CE24	Output	Transfers data with IC702 when "H".
3	CE12	Output	When signal switches from "H" to "L" then back to "H", data is set in IC703.
4	PEE	Output	Beep output.
5, 6	XO, XI	—	Terminals for connection with 4.5MHz crystal oscillator.
7, 8	VDD	—	Power supply terminals (5V)
9	POWER	Input	Detects status of power switch. "H" when ON.
10	ACC	Input	Detects status of ACC power supply. "H" when ON.
11	BACK UP	Input	Detects status of back up power supply. "H" when ON.
12, 13	GND	—	Ground.
14	NC	—	Not connected.
15, 16	E01, E02	Output	PLL error outputs.
17	CE	Input	Input for pulses from back up power supply detection circuit.
18	FM	Input	Programmable counter input. Receives input from prescaler.
19	AM	Input	Same as 18 about.
20	PSC	Output	Pulse swallow control output.
21	GND	—	Ground.
22	STANDBY	Output	"H" when IC601 is in standby status. "L" when tape is operating
23	DOLBY NR	Output	"H" when Dolby NR is on.
24	ANTI-1	Output	Causes LED to flash when Anti-Theft is operating.
25	ANTI-2	Output	"H" when "Anti-Theft" is displayed.
26	MS	Input	MS input.
27	I2	Output	
28	I1	Output	
29	I0	Output	IC601 control data terminal.
30	SO	Output	Serial data output.
31	SCK	Output	Serial clock signal output.
32	SI	Input	Input for serial data from IC702.
33	VDD	—	Power supply terminal. (5V)
34	END2/SD	Input	Tape mode: Reverse tape end pulse detection terminal. Tuner mode: SD signal input terminal. "H" when a station is tuned in.

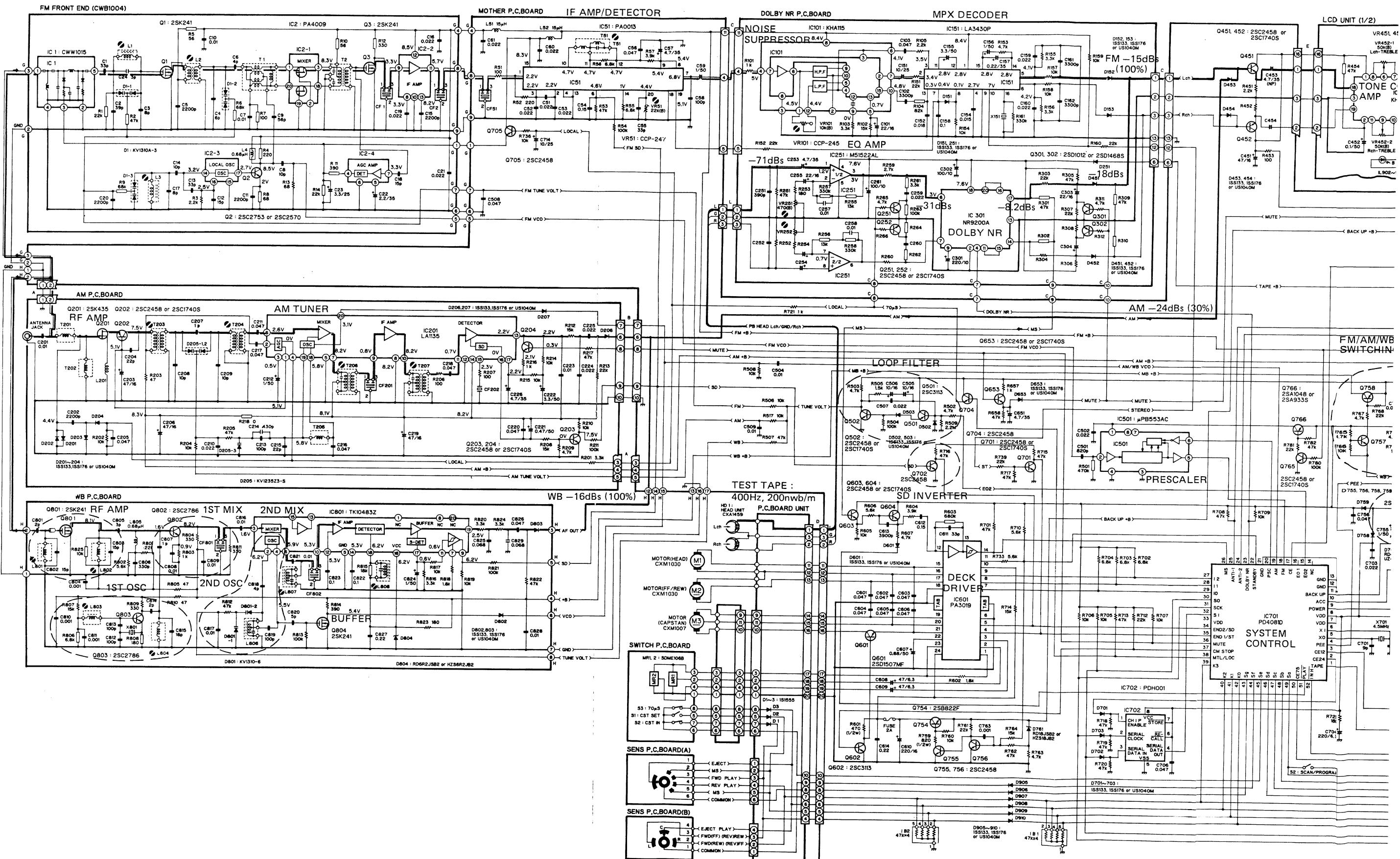
Pin No	Pin Name	I/O	Function and Operation
35	END1/ST	Input	<u>Tape mode:</u> Forward tape end pulse detection terminal <u>Tuner mode:</u> ST signal input terminal. "H" when a stereo broadcast is being received.
36	MUTE	Output	Mute signal output. "H" when mute is on.
37	CM STOP	Output	Capstan motor stop terminal when in tape mode. "H" When the capstan motor is stopped.
38	MTL/LOC	Output	<u>Tape mode:</u> Tape equalizer amplifier switching terminal. "H" when in metal position. <u>Tuner mode:</u> "H" during seek operation.
39 40 41 42	K3 K2 K1 K0	Input	Key return input.
43 44 45 46 47 48 49	Sg Sf Se Sd Sc Sb Sa	Output	Key strobe output.
50	CE75	Output	Chip enable output for IC901 (LCD driver).
51	PLAY	Output	"L" during tape play.
52	INH	Output	Turns LCD display on and off. "L" when LCD display

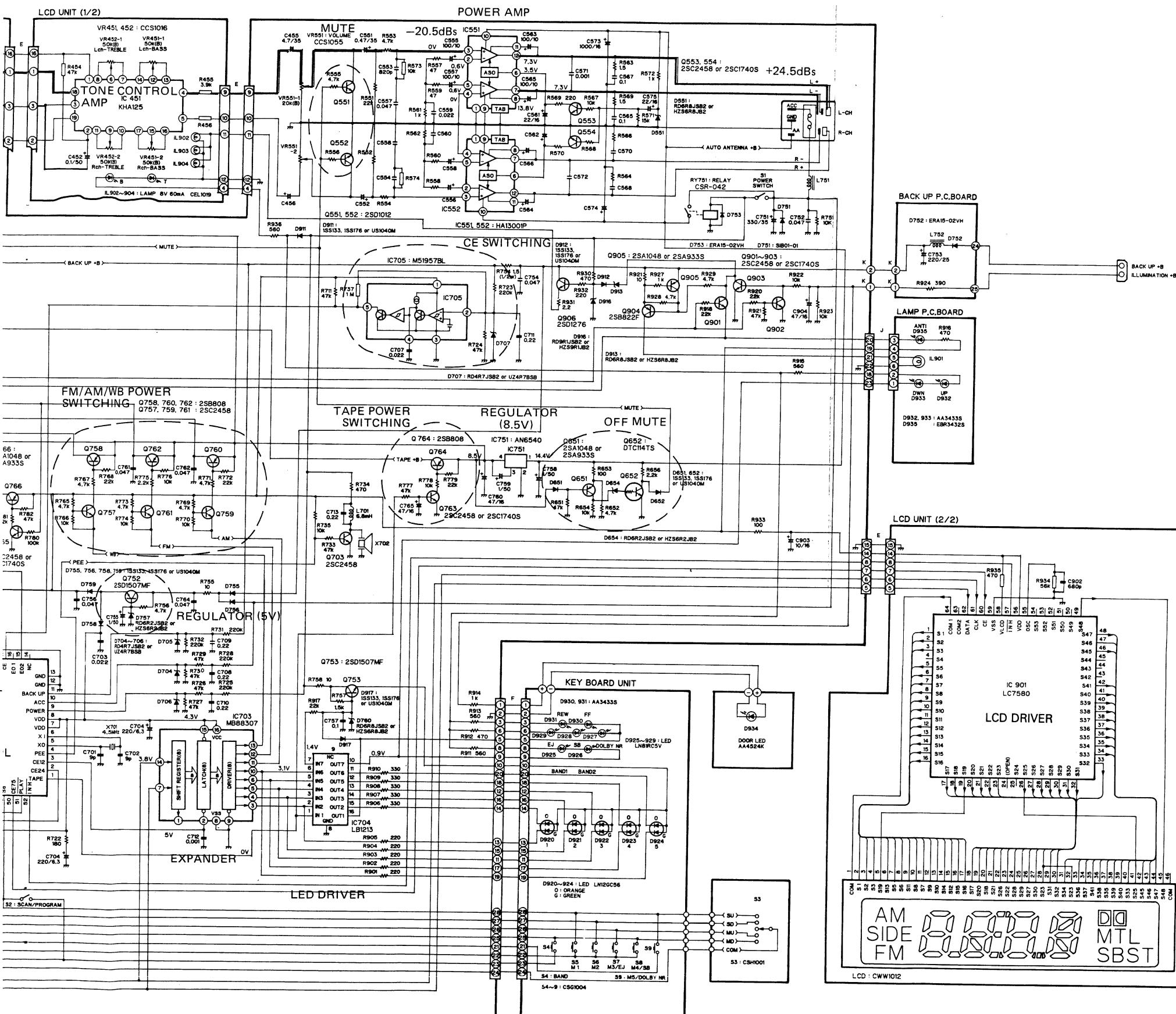
- LCD (CWW1012)



NOTE: COM terminal connects to all elements

6. SCHEMATIC CIRCUIT DIAGRAM





NOTE
 — Indicates a chip resistor.
 — Indicates a chip capacitor.
 — Indicates a chip inductor.

SWITCHES:

- Switch P.C. Board

- S1: CST SET SWITCH ON-OFF
- S2: CST IN SWITCH ON-OFF
- S3: 70μS SWITCH ON (120μS)-OFF (70μS)

The underlined indicates the switch position.

Tuner Amp Unit(KE-81ZBM-02)

- Consists of
- Mother P.C. Board
- AM P.C. Board
- WB P.C. Board
- Dolby NR P.C. Board
- Lamp P.C. Board
- Back Up P.C. Board
- FM Front End(CWB1004)

A

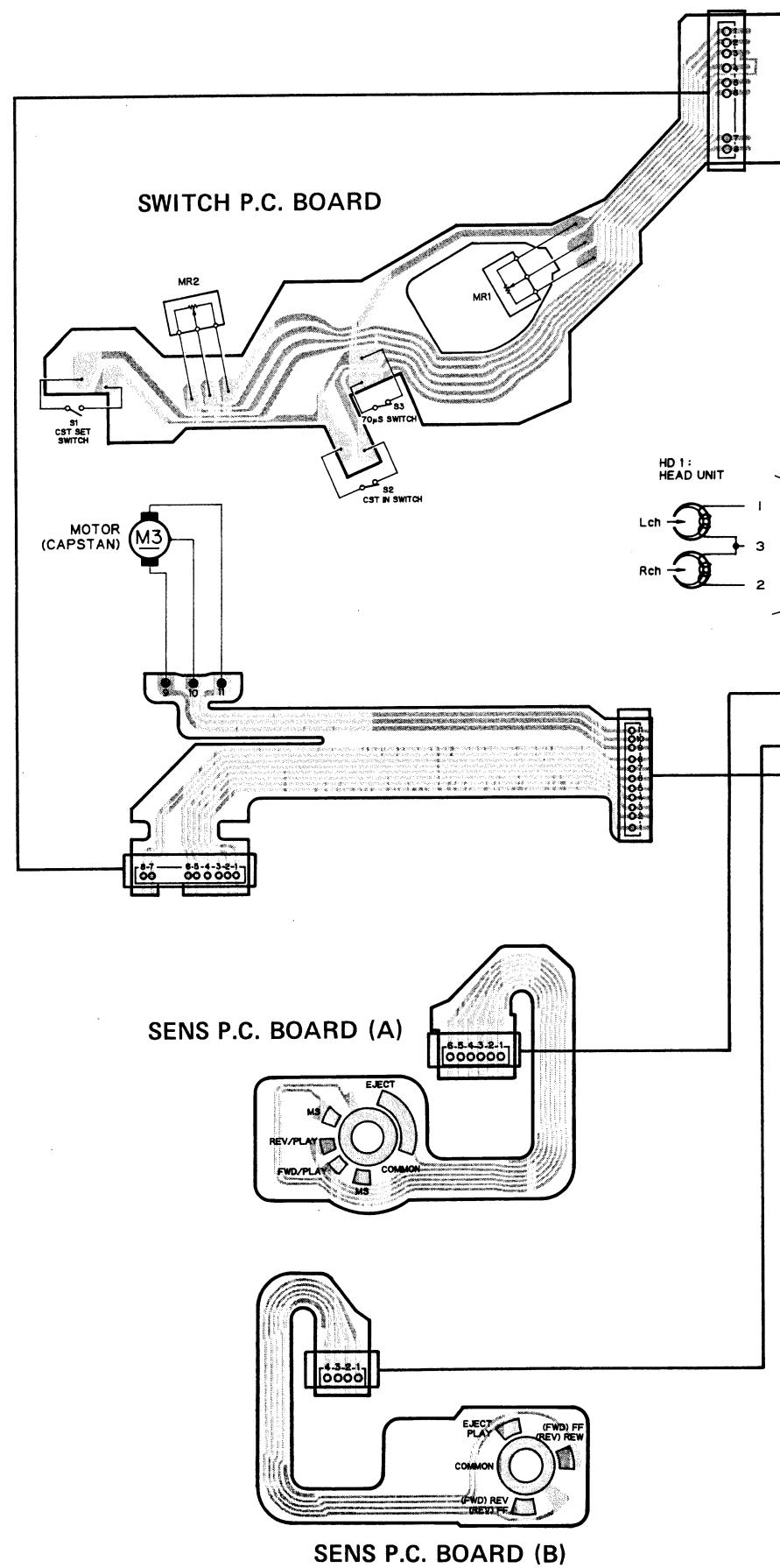
B

C

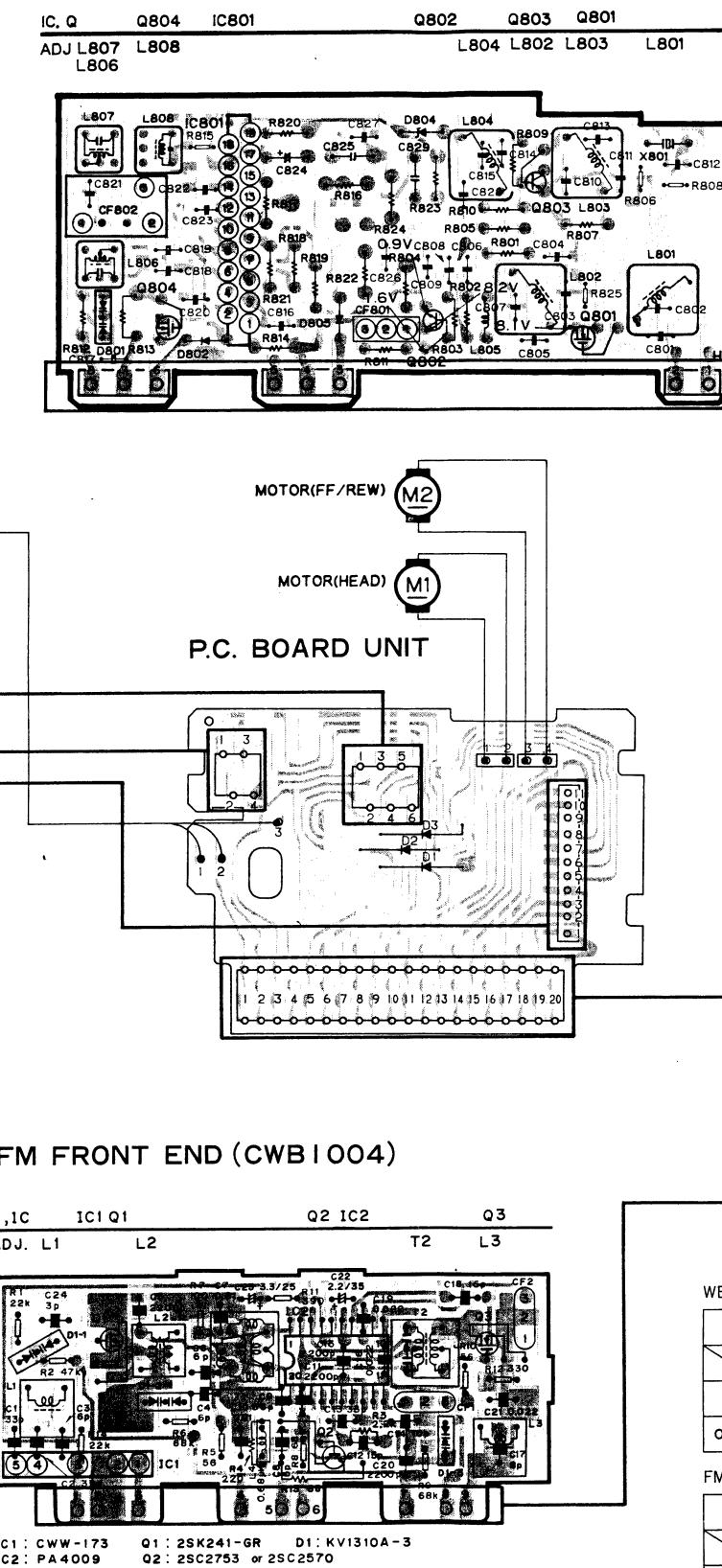
D

Fig. 7

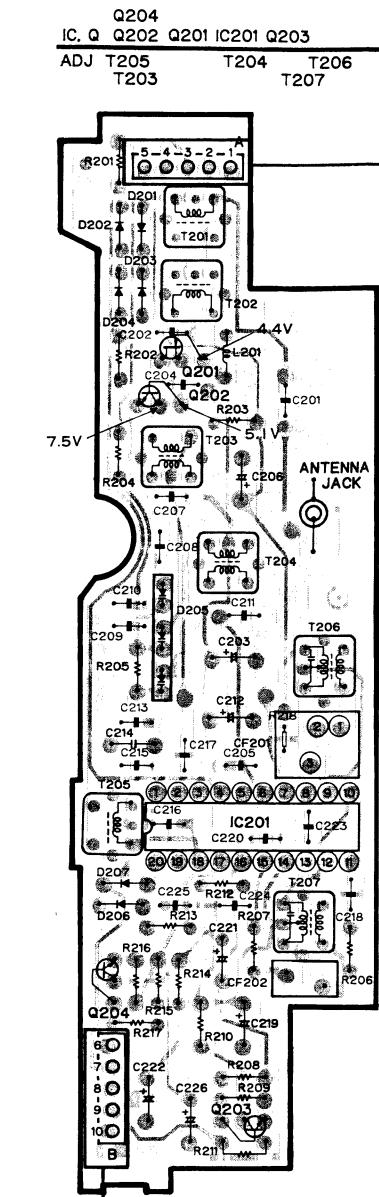
7. CONNECTION DIAGRAM



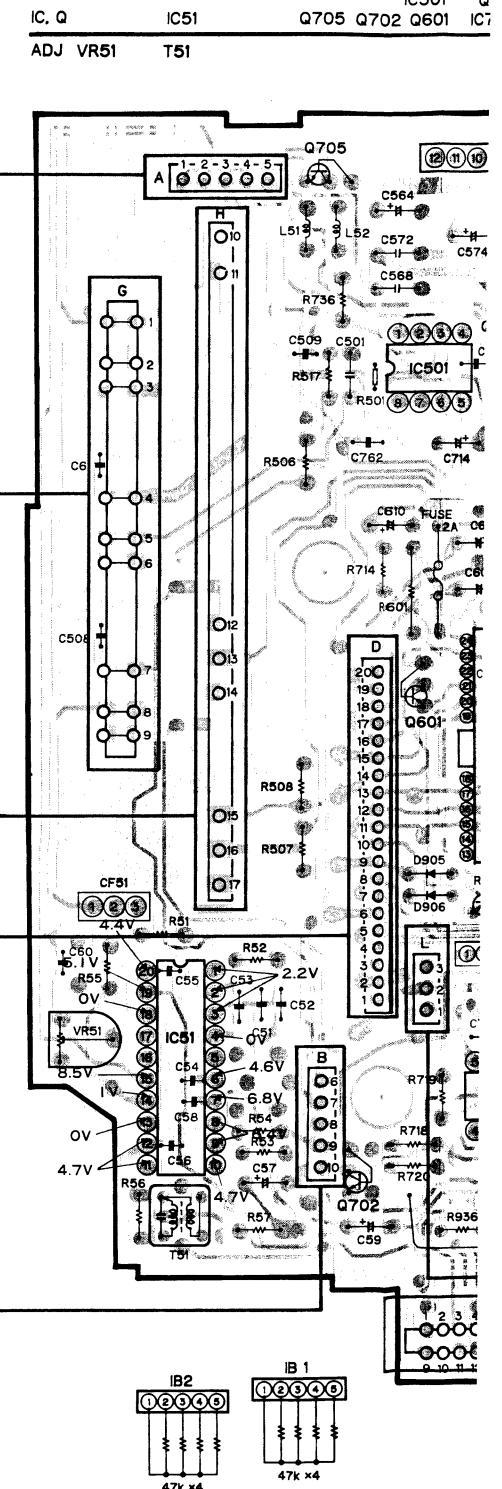
WB P.C. BOARD



AM P.C. BOARD



MOTHER P.C. BOARD



WB P.C. BOARD : IC801

1	2	3	4	5	6	7	8	9	10
	6.2V	1.6V	5.5V	OV	5.9V			6.2V	5.3V
11	12	13	14	15	16	17	18	19	20
0.6V	5.3V		5.3V		6.2V	0.6V	6.2V	2.5V	

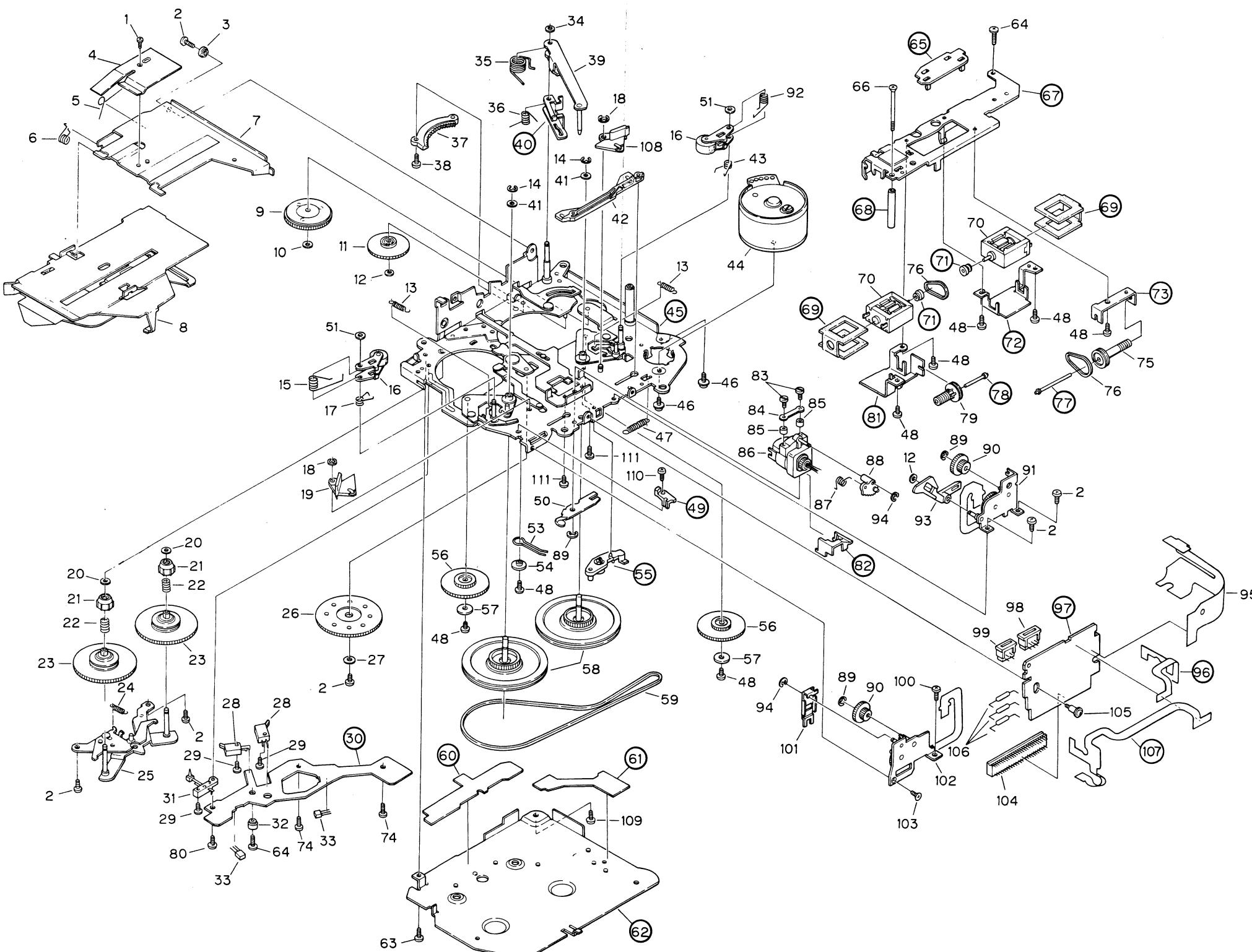
FM FRONT END:IC2

1	2	3	4	5	6	7	8	9	10
	OV	8.3V			OV	3.3V	3.3V	3.3V	OV
11	12	13	14	15	16	17	18	19	20
5.7V	8.5V	8.2V	3.2V	OV	2.5V	2.7V		OV	

AM P.C. BOARD:IC201

I	2	3	4	5	6	7	8	9
5.1V	V	0.5V	OV	OV	2.6V	8.2V	8.2V	0.8V
I1	I2	I3	I4	I5	I6	I7	I8	I9
0.7V	OV	2.2V	8.2V	2.3V	OV	2.2V	5.8V	5.8V

8. CASSETTE MECHANISM EXPLODED VIEW



● Parts List

NOTE:

- For your part marks ★★ a ★★: GENER This classifi model numl
- Parts whose
- Parts marke longer than

Mark	No.
	1
	2
	3
	4
	5

A	6
	7
	8
	9
	10

B	11
	12
	13
	14
	15

★★	16
	17
	18
	19
	20

C	21
	22
	23
	24
	25

★★	26
	27
	28
	29
	30

D	31
	32
	33
	34

Fig. 9

● Parts List

NOTE:
 • For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
 ★★: GENERALLY MOVES FASTER THAN ★.
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

• Parts whose parts numbers are omitted are subject to being not supplied.
 • Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	HBA-147	Screw M1.4×1.4		35	CBH-887	Spring
	2	BMZ20P040FMC	Screw		36	CBH-886	Spring
	3	CLB-663	Bush		37	CNV1075	Gear
	4	CBL1043	Spring		38	CBA1004	Screw M2×6
	5	CBH-867	Spring		39	CXD-389	Arm Unit
	6	CBH-837	Spring		40		Arm
	7	CNC1597	Arm		41	HBF-179	Washer
	8	CXA2164	Holder Unit		42	CNV1257	Lever
	9	CXA2088	Gear Unit		43	CBH-833	Spring
	10	CBF1024	Washer	★★	44	CXM1007	Motor (Capstan)
	11	CNY-271	Gear		45		Chassis Unit
	12	CBF-126	Washer		46	PMS26P025FMC	Screw
	13	CBH-835	Spring		47	CBH-830	Spring
	14	CBG1003	E Type Washer		48	HBA-175	Screw M2×2.5
	15	CBH-832	Spring		49		Spacer
★★	16	CXA1445	Pinch Roller Unit		50	CBL1050	Spring
	17	CBH-834	Spring		51	CBF1025	Washer
	18	YE25FUC	E Type Washer		52	
	19	CNV1254	Arm		53	CBH-893	Spring
	20	CBF1022	Washer		54	CLA1110	Collar
★★	21	CNW-932	Collar		55		Clamper
	22	CBH-827	Spring		56	CNV1616	Gear
	23	CXD2089	Reel Unit		57	CLA1238	Collar
	24	CBH-868	Spring		58	CNV1572	Flywheel
	25	CXA1481	Bracket Unit	★★	59	CNT-111	Belt
★★	26	CNW-944	Gear		60		Insulator
	27	CLA1109	Collar		61		Insulator
	28	CSN1003	Switch (70 μS, CST IN)		62		Cover
	29	CBA1025	Screw M1.7×5.5		63	BMZ20P030FMC	Screw
	30		P.C. Board		64	CBA-172	Screw M1.7×5.5
★★	31	CSN-089	Switch (CST SET)		65		Holder
	32	CLA1170	Collar		66	CBA-165	Screw M2×25
	33	SDME106B	Magnetic Resistive Device		67		Guide
	34	CBF-046	Washer		68		Spacer
					69		Insulator

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
★★	70	CXM1030	Motor (PF/REW, Head Position)		93	CNV1495	Arm
	71		Pulley		94	YE15FUC	E Type Washer
	72		Bracket		95	CNP1227	P.C. Board
	73		Bracket		96		P.C. Board
	74	CBA1037	Screw M2×2.5		98	CKS1075	Connector (6P)
	75	CNV1255	Pulley		99	CKS1073	Connector (4P)
★★	76	CNT1010	Belt		100	BMZ20P060FMC	Screw
	77		Shaft		101	CNH-004	Arm
	78		Shaft		102	CXA1548	Holder Assy
	79	CNV1256	Pulley		103	HBA-209	Screw M2×2
	80	CBA1054	Screw M2×5		104	CKS-678	Connector (20P)
	81		Bracket		105	CBA1022	Screw M2×2×3
	82		Cover	★	106	1S1555	Diode
	83	CBA1055	Screw M1.4×8		107		P.C. Board
	84	CBE-114	Spring		108	CNV1253	Arm
	85	CNY-134	Azimuth Rubber		109	CBA1060	Screw M2×7
★★	86	CXA1459	Head Unit		110	CBA1015	Screw M2×4
	87	CBH-829	Spring		111	CBA1041	Screw M2×2.5
	88	CNW-939	Gear				
	89	YE12FUC	E Type Washer				
	90	CNV1262	Gear				
	91	CXA1546	Holder Assy				
	92	CBH-831	Spring				

9. CABINET EXPLODED VIEW

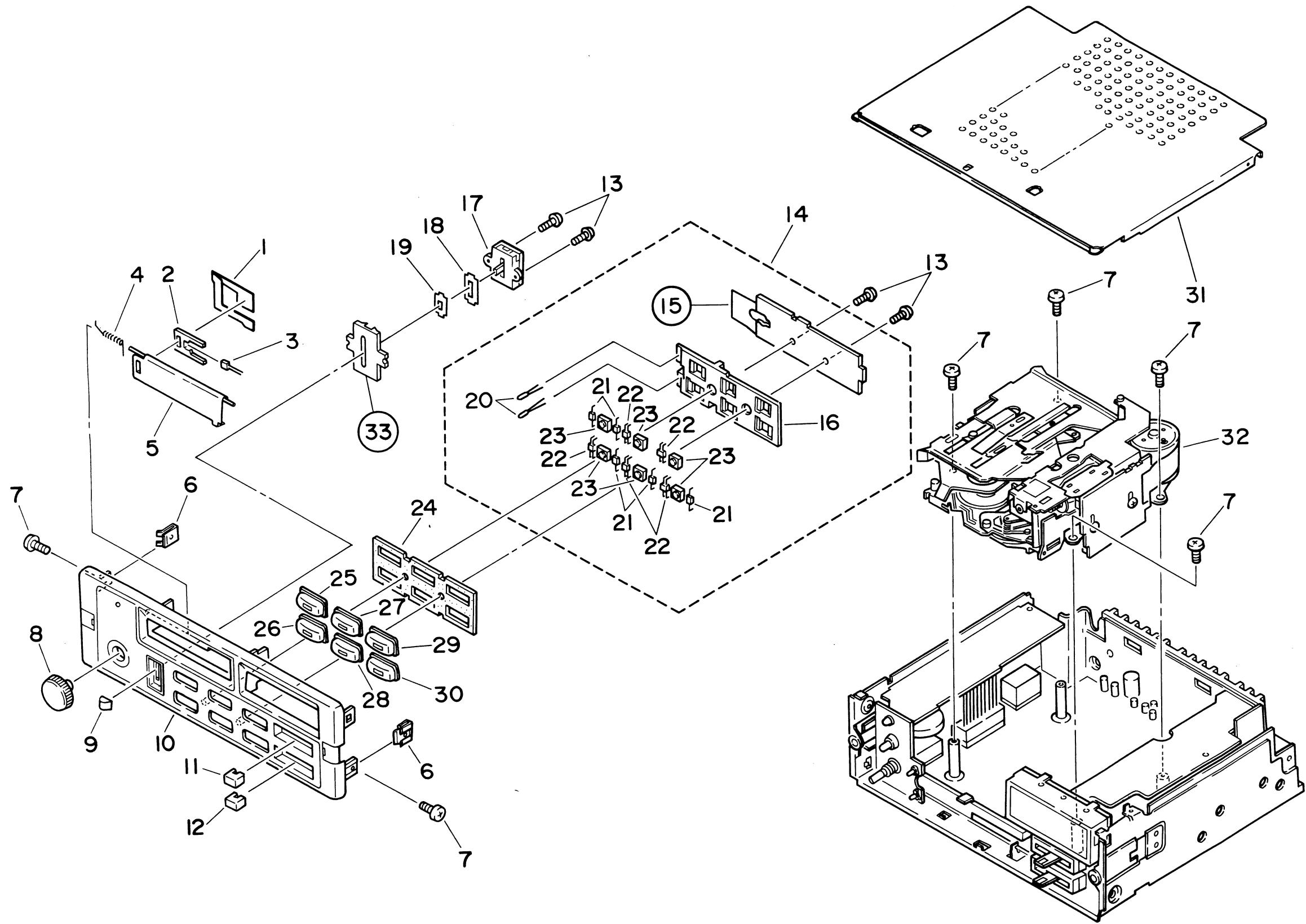


Fig. 10

1 2 3 4 5 6

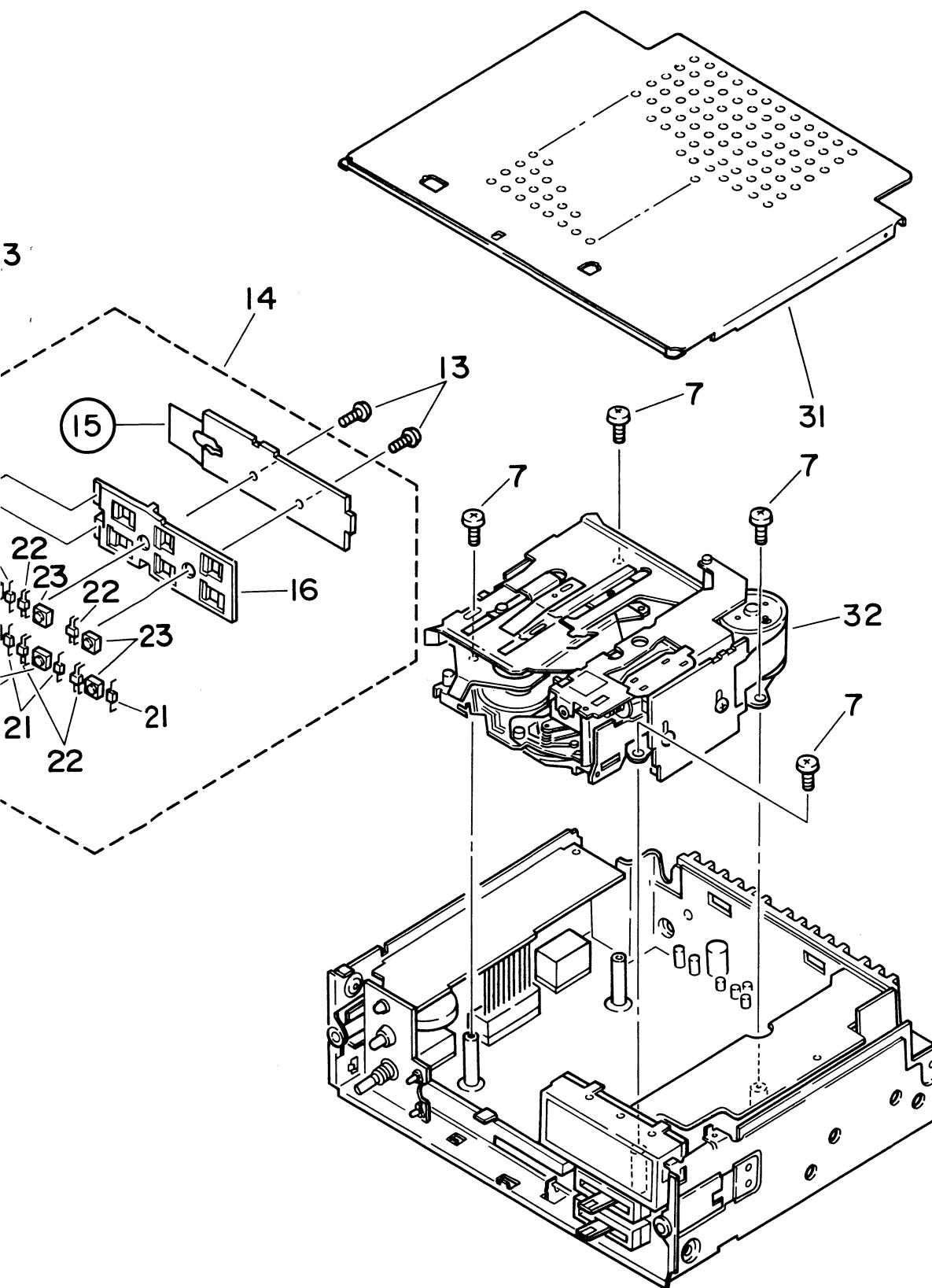


Fig. 10

● Parts List

Mark No.	Part No.	Description	Mark No.	Part No.	Description
1	CNP1278	P.C. Board	★ 21	LN81RC5V	LED
2	CNS1181	Lens	★ 22	LN12GC56	LED
★ 3	AA4524	LED	★★ 23	CSG1004	Switch
4	CBH1081	Spring	24	CNM1080	Spacer
5	CAT1012	Door	★ 25	CAC1376	Button (BAND)
6	CNC1183	Holder	★ 26	CAC1373	Button (3)
7	BMZ26P050FMC	Screw	★ 27	CAC1371	Button (1)
★ 8	CAA1014	Knob (VOLUME)	★ 28	CAC1374	Button (4)
★ 9	CAC1077	Button (UP/DN)	★ 29	CAC1372	Button (2)
10	CXA1764	Grille Unit	★ 30	CAC1375	Button (5)
★ 11	CAC1377	Knob (T)	31	CXA1347	Case Unit
★ 12	CAC1378	Knob (B)	32	CXK1651	Cassette Mechanism Assy
13	BPZ20P060FZK	Screw	33		Lens
○ 14	CWM1145	Key Board Unit			
15		P.C. Board			
★★ 16	CNV1103	Housing			
17	CSH1001	Switch			
18	CNM1345	Cover			
19	CNM1255	Cover			
★ 20	AA3433S	LED			

10. CHASSIS EXPLODED VIEW

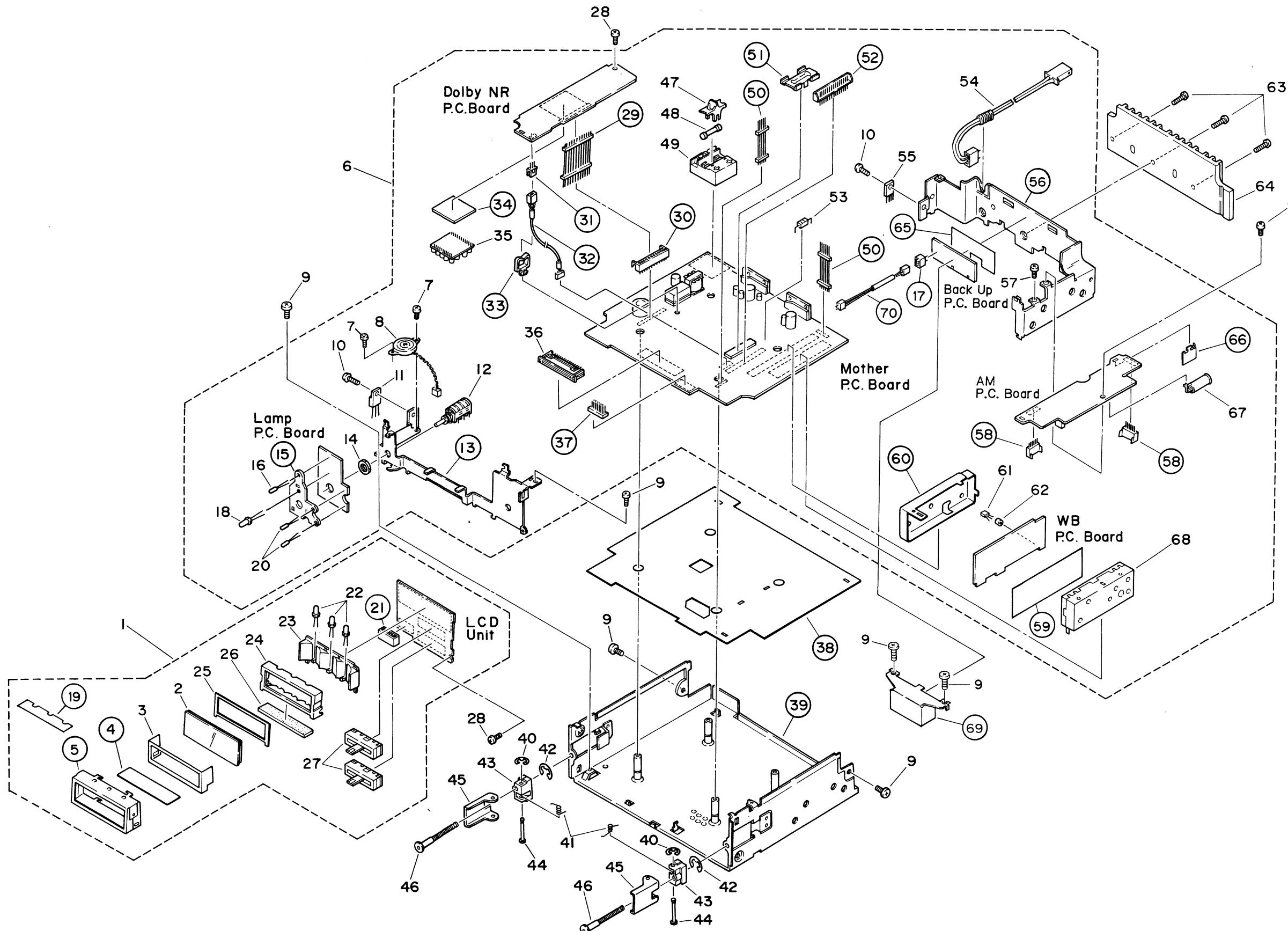


Fig. 11

● Parts List

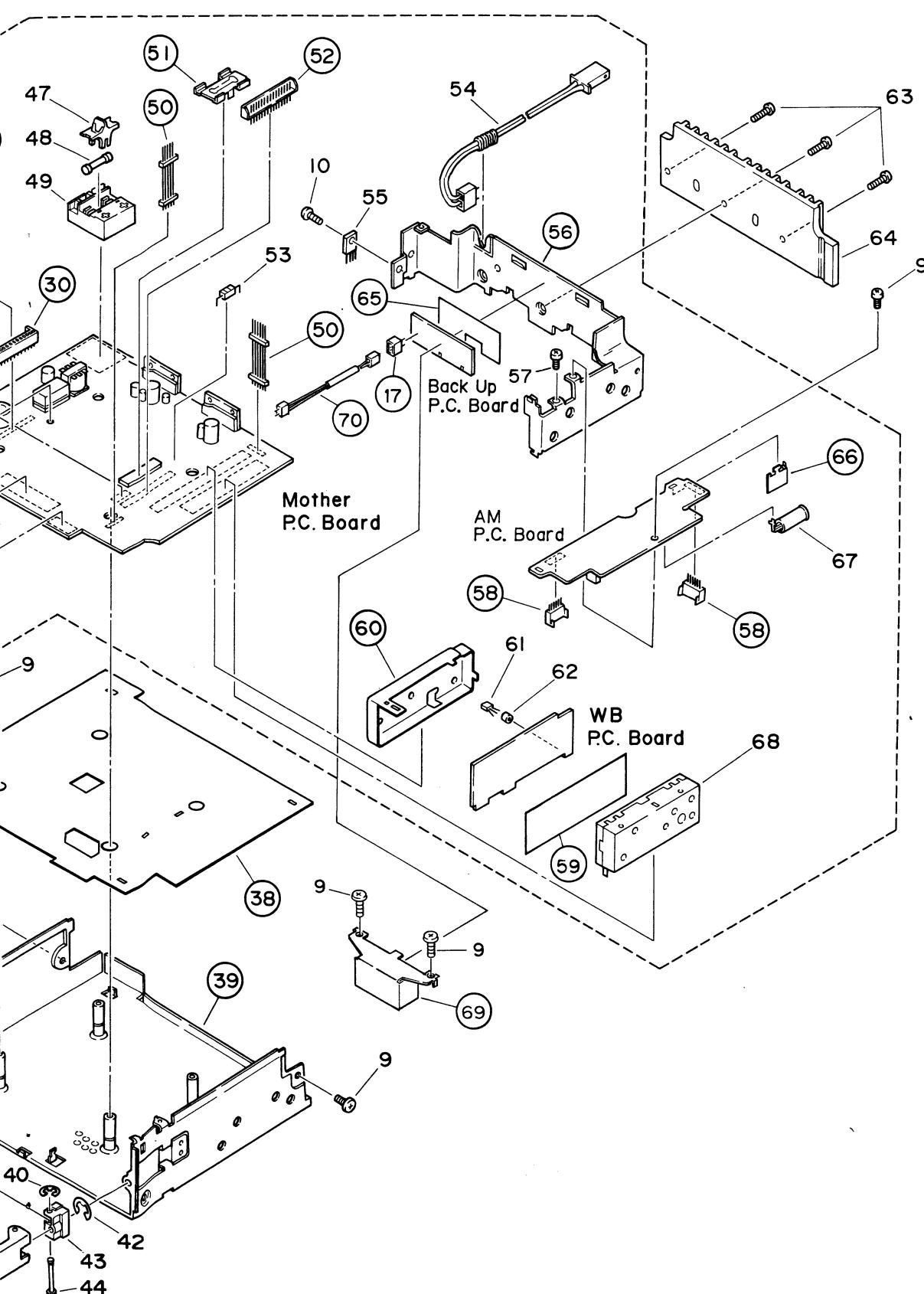


Fig. 11

A

B

D

Mark No.	Part No.	Description	Mark No.	Part No.	Description
1	CWM1144	LCD Unit	36	CKS1130	Connector
2	CWW1012	LCD	37		Plug
3	CNM1638	Spacer	38		Insulator
4		Insulator	39		Chassis Unit
5		Case	40	YE15FUC	E Type Washer
6	CWM1143	Tuner Amp Unit	41	CBH1019	Spring
7	CBA1015	Screw	42	YE20FUC	E Type Washer
8	CPV1004	Buzzer	43	CNR1016	Slider
9	BMZ26P050FMC	Screw	44	CLA1071	Shaft
10	BMZ26P080FMC	Screw	45	CNC1103	Clamper
11	2SD1276	Transistor	46	CLA1072	Bolt
12	CCS1055	Volume(VOLUME)	47	CNV1211	Fuse Holder
13		Frame	48	CEK1007	Fuse, 6.3A
14	CBN-003	Nut, M7	49	CKS1218	Connector
15		Holder	50		Plug
16	EBR3432S	LED	51		Heat Sink
17		Plug	52		Plug
18	CEL1003	Lamp, 14V 40mA	53	CEK1009	Fuse, 2A
19		Spacer	54	CDE1159	Connector
20	AA3433S	LED	55	AN6540	IC
21		Connector	56		Frame
22	CEL1019	Lamp, 8V 60mA	57	BMZ26P030FMC	Screw
23	CNV1207	Holder	58		Connector
24	CNV1144	Holder	59		Insulator
25	CNM1155	Sheet	60		Case
26	CNV1454	Connector	61	2SK241	Transistor
27	CCS1016	Volume(TREBLE, BASS)	62	CTX-022	Bead Core
28	PMS26P040FMC	Screw	63	BMZ30P080FMC	Screw
29		Plug	64	CNR1061	Heat Sink
30		Connector	65		Insulator
31		Plug	66		Shield
32		Connector	67	CKX1006	Antenna Connector
33		Clamper	68	CWB1004	FM Front End
34		P.C. Board	69		Case
35	NR9200A	IC	70		Connector

11. ELECTRICAL PARTS LIST

NOTE:

- For your parts Stock Control, the fast moving items are indicated with the marks ** and *.
** : GENERALLY MOVES FASTER THAN *.
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
 - Parts whose parts numbers are omitted are subject to being not supplied.
 - The part numbers shown below indicate chip components.

Chip Resistor

RS1/8S □□□J, RS1/10S □□□J

Chip Capacitor (except for CQS.....)

CKS..... CCS..... CSZS.....

Tuner Amp Unit(KE-81ZBM-02)
Consists of
●Mother P.C.Board
●AM P.C.Board
●WB P.C.Board
●Dolby NR P.C.Board
●Lamp P.C.Board
●Back Up P.C.Board
●FM Front End(CWB1004)

Mark	=====	Circuit Symbol & No.	====	Part Name	Part No.
R	6	9			RS1/8S683J
R	7				RS1/8S101J
R	8				RS1/8S680J
R	11				RS1/8S391J
R	12				RS1/8S331J
R	13				RD1/4PS680JL (RD1/4PS680JL)

CAPACITORS

Unit Number : CWB1004
Unit Name : FM Front End

MISCELLANEOUS

Mark	=====	Circuit Symbol & No.	=====	Part Name	Part No.
**	IC 1				CW1015 (CWW-173)
**	IC 2				PA4009
**	Q 1	3			2SK241
**	Q 2				2SC2753
*	D 1				(2SC2570)
L	1		Coil		KV1310A-3
L	2		Coil		CTC1001
L	3		Coil		CTC1002
L	4		Inductor		CTC1003
T	1		Coil		CTF-185
T	2		Coil		CTC1005
CF	1	2	Ceramic Filter		CTC1004
					CTF-182

* KV1310A-3 Consists of 3 parts. Separate it into 3 parts before installation. (Be sure replace 3 parts at a time.)

Mark	=====	Circuit Symbol & No.	====	Part Name	Part No.
C	1			CCSSH330J50	
C	2			CCSSH390J50	
C	3			CCSCH060D50	
				(CCSCH060C50)	
C	4			CCSTH060C50	
				(CCSTH060D50)	
C	5	11	15	CKSYB222K50	
C	6			CCSCH040C50	
C	7	10		CKSYB103K50	
C	8			CCSCH100D50	
				(CCSCH100C50)	
C	9			CCSSH560J50	
C	12	18		CCSTH150J50	
C	13			CCSTH330J50	
C	14			CCSTH100D50	
C	16	19	21	CKSYB223K50	
				(CKSYB223C50)	
C	17			CCSUJ080D50	
C	22			CEA2R2M35LS	
C	23			CEA3R3M25LS	
C	24			CCSSH020C50	

RESISTORS

Mark	=====	Circuit Symbol & No.	====	Part Name	Part No.
R	1	14			RS1/8S22
R	2				RS1/8S47
R	3				RD1/4PS2
R	4				RD1/4PS2
R	5	10			RS1/8S56

MISCELLANEOUS

Mark	=====	Circuit Symbol & No.	====	Part Name	Part No.
**	IC 51				PA0013
**	IC 101				KHA115
**	IC 151				LA3430P
**	IC 201				LA1135
**	IC 251				M51522AL

Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.
** IC 301		NR9200A	T 51		Coil		CTC-198
** IC 501		μPB553AC	T 201		Coil		CTB1011
** IC 551 552		HA13001P	T 202		Coil		CTB1012
** IC 601		PA3019	T 203 204		Coil		CTB1013
** IC 701		PD4081D	T 205		Coil		CTB1014
** IC 702		PDH001	T 206		Coil		CTE1011
** IC 703		MB88307	T 207		Coil		CTE1012
** IC 704		LB1213	RY 751		Relay		CSR-042
** IC 705		M51957BL	CF 51		Ceramic Filter		CTF-182
** IC 751		AN6540	CF 201		Filter		CTF-100
** IC 801		TK10483Z	CF 202		Ceramic Resonator		CTF-247
** Q 201		2SK435	CF 801		FM Ceramic Filter		CTF-101
** Q 202 203 204 251 252 451 452 502 553 554 603 604 653 701 763 765 901 902 903	(2SC1740S)	2SC2458	CF 802		Filter		CTF1004
** Q 301 302 551 552		(2SD1012)	IB 1 2		47kΩ×4		CWV-247
** Q 501 602		(2SD1468S)	X 151		Ceramic Resonator		CSS1028
** Q 601 752 753		2SC3113	X 701		Cristal Resonator		(CSS1022)
** Q 651 766 905		2SD1507MF	X 702		Buzzer		CSS-046
** Q 754 904		2SA1048	X 801		Cristal Resonator		CPV1004
** Q 758 760 762 764		(2SA933S)	** IL 901		Lamp 14V 40mA		CSS1001
** Q 801 804		DTC114TS	** VR 51		Semi-fixed 20kΩ(Β)		CEL1003
** Q 802 803		2SC2458	** VR 101		Semi-fixed 10kΩ(Β)		CCP-247
** Q 906		2SB822F	** VR 251 252		Semi-fixed 470Ω(Β)		CCP-245
* D 151 152 153 201 202 203 204 206 207 251 451 452 453 454 502 503 601 651 652 653 701 702 703 755 756 758 759 802 803 905 907 906 908 909 910 911 912 917	(US1040M)	2SB808	** VR 551		Volume 20kΩ(Β)		CCP-314
* D 205		2SK241	**		Bead Core		CCS1055
* D 551 760 913					Fuse 6.3A		CTX-022
* D 654 757							CEK1007
* D 704 705 706 707		KV1235Z3-S					
* D 751		RD6R8JSB2	R 51 453 653 933				RD1/4PS101JL
* D 752 753		(HZS6R8JB2)	R 52 569 570 901 902 903 904 905 932				RD1/4PS221JL
* D 761		RD6R2JSB2	R 53 507 651 658 701 921				RD1/4PS473JL
* D 801		(HZS6R2JB2)	R 54 504 780				RD1/4PS104JL
* D 804		RD4R7JSB2	R 55 56 702 703 704				RD1/4PS682JL
* D 916		(UZ4R7BSB)	R 57 604				RD1/4PS392JL
* D 932 933	LED	S1B01-01	R 101				RD1/4PS102JL
* D 935		ERA15-02VH	R 102				RD1/4PS153JL
L 51 52	Ferri-Inductor 15μH	RD18JSB2	R 103 155 156				RD1/4PS332JL
L 201	Micro-Inductor 2.7μH	(HZS18JB2)	R 104				RS1/8S823J
L 701	Coil	KV1310-6	R 105				RD1/4PS222JL
L 751	Choke Coil	RD6R2JSB2	R 151 152 160 303 304 307 308				RD1/4PS223JL
L 752	Choke Coil	(HZS6R2JB2)	R 153 265 266 311 312				RD1/4PS472JL
L 801 802 804	Coil	RD9R1JSB2	R 154 157 158 159				RD1/4PS103JL
L 803	Coil	(HZS9R1JB2)	R 161 257 258				RS1/8S334J
L 805	Micro-Inductor 0.68μH	AA3433S	R 201				RD1/4PS332JL
L 806	Coil	EBR3432S	R 202 204 210 214 215				RD1/4PS103JL
L 807	Coil	LAU150K	R 203				RD1/4PS470JL
L 808	Coil	LAU2R7M	R 205 217				RD1/4PS473JL
		CTF1018	R 206 207				RD1/4PS101JL
		CTH1015	R 208 212				RD1/4PS153JL
		CTH1016	R 209				RD1/4PS472JL
		CTC1006	R 211				RD1/4PS104JL
		CTC1007	R 213				RD1/4PS223JL
		LAUR68M	R 216				RD1/4PS102JL
		CTE1001	R 218				RS1/8S100J
		CTE1002	R 251 252 305 306				RD1/4PS473JL
		CTE1003	R 253 254 722 823				RD1/4PS181JL
			R 255 256				RS1/8S133J
			R 259 260				RD1/4PS272JL

Mark =====	Circuit Symbol & No.	==== Part Name	Part No.	Mark =====	Circuit Symbol & No.	==== Part Name	Part No.
R 261 262			RS1/8S332J	C 151			CEA100M25LS
R 263 264			RS1/8S104J	C 152			CKSYB183K25
R 301 302 309 310			RS1/8S473J	C 154			CKSYB103K50
R 451 452 656 775			RD1/4PS222JL	C 155			CEA3R3M50L2
R 501			RS1/8S474J	C 156			CEA010M50LS2
R 502 503 553 554 555 556 607 756 763 765			RD1/4PS472JL	C 157			CSZAR22K35
R 505 757			RD1/4PS152JL	C 158			CKSYF104Z25
R 506 508 510 567 568 605 707 709 735			RD1/4PS103JL	C 159 160 259 260			CKSYB223K50
R 509			RD1/4PS225JL	C 201 223			CKSYB103K50
R 551 552 712 739 761 768 772 779 781 917			RD1/4PS223JL	C 202			CKSYB222K50
R 557 558 559 560			RD1/4PS470JL	C 203 206			CEA470M16LS
R 561 562 572 657 721 914 927			RD1/4PS102JL	C 204 215			CCSUJ220J50
R 563 564 565 566			RD1/4PS1R5JL	C 205 211 216 217 218 220			CKSYF473Z50
R 571 714 764			RD1/4PS153JL	C 207			CCSCH010C50
R 573 574 825			RS1/8S103J	C 208 209			CCSSH100D50
R 601			RD1/2PS471JL	C 210 224 225			CKSYB223K50
R 602 818			RD1/4PS182JL	C 212			CEA010M50LS2
R 603			RS1/8S684J	C 213			CCSRH101J50
R 606 710 738			RD1/4PS562JL	C 214			CQPA431G2A
R 652 767 769 771 773 928 929			RD1/4PS472JL	C 219			CEA470M16L2
R 654 705 706 751 923			RD1/4PS103JL	C 221			CEAR47M50I2
R 708 711 715 716 717 724 726 727			RD1/4PS473JL	C 222			CEA3R3M50L2
R 713 718 719 720 729 730 733 762 777 782			RD1/4PS473JL	C 226			CEA4R7M35L2
R 723 725 728 731 732			RD1/4PS224JL	C 251 252			CKSYB391K50
R 734 912 916 930			RD1/4PS471JL	C 253 254			CEANL4R7M35LL
R 736 760 766 770 774 776 778 922			RD1/4PS103JL	C 256			CEA220M16LS
R 737			RS1/8S105J	C 257 258			CQMA103J50LL
R 755 758 926			RD1/4PS100JL	C 261			CEA101M10LL
R 759			RD1/2PS821JL	C 301			CEA221M10L2
R 801			RD1/4PS223JL	C 302			CEA101M10L2
R 802			RD1/4PS562JL	C 451 765			CEA470M16LS
R 803			RD1/4PS102JL	C 453 454			CEA4R7M16NPLL
R 804 809 811			RD1/4PS331JL	C 501 553 554			CKCYB821K50
R 805 810			RD1/4PS470JL	C 503 504 509			CKSYB103K50
R 806			RS1/8S682J	C 505 506			CSYA100M160S
R 807			RD1/4PS153JL	C 508 706 756			CKSYF473Z50
R 808			RS1/8S181J	C 551 552			CEAR47M50I2
R 812 822			RD1/4PS473JL	C 555 556 557 558 563 564 565 566			CEA101M10L2
R 813 821			RD1/4PS104JL	C 559 560			CQMA223J50
R 814			RD1/4PS391JL	C 567 568 569 570			CQMA104K50
R 815			RS1/8S183J	C 571 572			CQMA102J50
R 816 820 824			RD1/4PS332JL	C 573 574			CEA102M16L2
R 817 819			RD1/4PS103JL	C 575			CEA220M16L2
R 906 907 908 909 910 924			RD1/4PS391JL	C 577 578			CQEA473J50
R 911 913 915 936			RD1/4PS561JL	C 607			CEAR68M50LS2
R 918 920			RD1/4PS223JL	C 608 609			CEA470M6R3LS
R 931			RD1/4PS2R2JL	C 610			CEA221M16L2
CAPACITORS							
Mark =====	Circuit Symbol & No.	==== Part Name	Part No.				
C 51 52 53 60 61 502 507 703			CKSYB223K50	C 701 702			CCSCH090D50
C 54 612			CKSYF154Z25	C 704			CEA221M6R3L2
C 55 611			CCSCH330J50	C 705	0.22F/5.5V		CCL1003
C 56 601 602 603 604 605 606 761 762 764			CKSYF473Z50	C 712 763			CKSYB102K50
C 57 455 456 561 562			CEA4R7M35L2	C 714 903			CEA100M25LS
C 58			CCSCH101J50	C 751			CEA331M35L2
C 59 758 759			CEA010M50L2	C 752 754			CKCYF473Z50
C 101 153 255 303 304			CEA220M16L2	C 753			CEA221M25L2
C 102 161 162			CKSYB332K50	C 755			CEA010M50LS2
C 103 826			CKSYF473Z50	C 757			CKSYF104Z25

Mark	Circuit Symbol & No.	Part Name	Part No.
C 760 904		CEA470M16L2	
C 801 814		CCSCH020C50	
C 802 803		CCSCH150J50	
C 804 810 811		CKSYB102K50	
C 805		CCSCH030C50	
C 806		CCSRH331J50	
C 807		CCSCH010C50	
C 808 809 816 817 821 828		CKSYB103K50	
C 812 813		CCSUJ101J50	
C 815		CCSCH180J50	
C 818		CCSCH040C50	
C 819		CCSCH101J50	
C 820		CCSCH050C50	
C 822 823		CKSYF104Z25	
C 824		CEA010M50LS2	
C 825 829		CQEA683J50	
C 827		CKSYF224Z50	

Unit Number :
Unit Name : LCD Unit

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
## IC 451		KHA125	
## IC 901		LC7580	
## IL 902 903 904	Lamp 8V 60mA	CEL1019	
## VR 451 452	Volume 50kΩ(B) LCD	CCS1016 CWW1012	
RESISTORS			
R 454		RS1/8S473J	
R 455 456		RS1/8S392J	
R 934		RS1/8S563J	
R 935		RS1/8S471J	

CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
C 452		CEA010M50LS	
C 902		CCSSL681J50	

12. PACKING METHOD

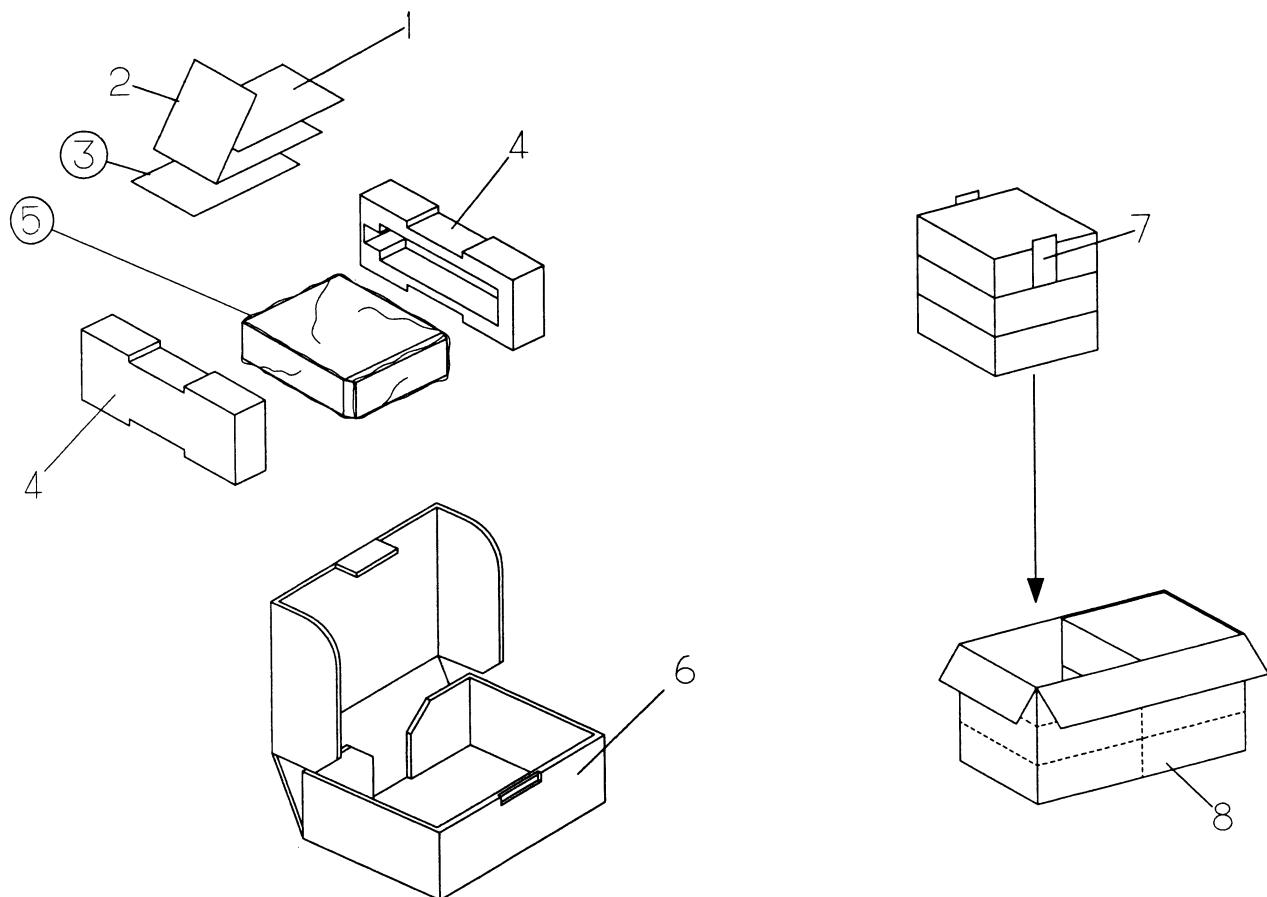


Fig. 12

● Parts List

Mark No.	Part No.	Description
1	CRB1032	Anti-Theft Radio Installation Instructions
2	CRB1031	Anti-Theft Program Instructions and Identification Card
3-1	CRY1005	Envelope
3-2		Label
3-3		Film
3-4	CRY1003	Card
3-5	CRW1014	Label
3-6	CRW1009	Tag
4	CHP1030	Styrofoam
5		Polyethylene Bag
6	CHG1336	Carton
7	CHW1009	Paper Sheet
8	CHL1336	Contain Box