ORDER NO. KM49407854C2

Service Manual

and Technical Guide

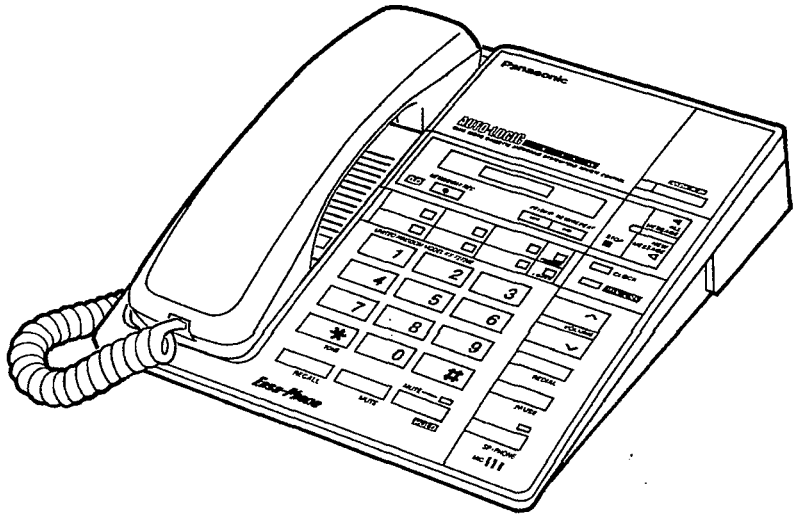
Telephone Equipment

Easa-Phone

INTEGRATED TELEPHONE
ANSWERING SYSTEM

KX-T2726E

(for United Kingdom)



■ SPECIFICATIONS

General:

Power Source:	AC; AC adaptor (Part No. KX-A11BEXE)
Power Output:	350 mW (max.)
Speaker:	Unit; 6.5 cm ($2^1/_2$") PM dynamic Handset; 2.6 cm ($1^3/_{16}$") PM magnetic type
Microphone:	Condenser microphone
Jacks:	BT TEL Jack, DC IN Jack
Dimensions:	$7^3/_4$"×$9^7/_{16}$"×$2^{27}/_{32}$" [197(W)×240(D)×72(H)mm]
Weight:	2.535 lbs (1.15 kg) (with handset)

Telephone Section:

Memory Capacity:	There are 6 Direct Call buttons, each Direct Call button consists of Upper and Lower memory locations. Each location (upper and lower) is capable of storing 16 digits.
Dial Speed:	Tone (DTMF)/Pulse (10 pps)
Redial:	—When using the handset, the unit redials the last dialled number once. —When using the SP-PHONE button, the unit redials the last dialled number up to 3 times if the line is busy (Automatic redial).
Pause:	Two automatic dial tone detectors

Tape Deck Section:

Greeting Message (OGM):	Micro Cassette (MC-10) (First greeting) Recording time is 30 seconds. (Second greeting) Recording time is 2 minutes 45 seconds.
Incoming message (ICM):	Micro Cassette (MC-30) Selectable recording times (VOX/1 MIN/GREETING ONLY)
Tape Speed:	2.4 cm/s
Wow and Flutter:	0.65 % (WRMS)
Motor:	Electrical governor motor

Design and specifications are subject to change without notice.

Panasonic

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians.
Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you mention the serial number, while down the 11 digits. The serial number may be found on the label affixed to the bottom of the unit.

FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.
When replacing, the following precautions will help prevent recurring malfunctions.
1) Cover the plastic parts boxes with aluminum foil.
2) Ground the soldering irons.
3) Use a conductive mat on the workable.
4) Do not grasp IC or pins with bare fingers.

TABLE OF CONTENTS

LOCATION OF CONTROLS

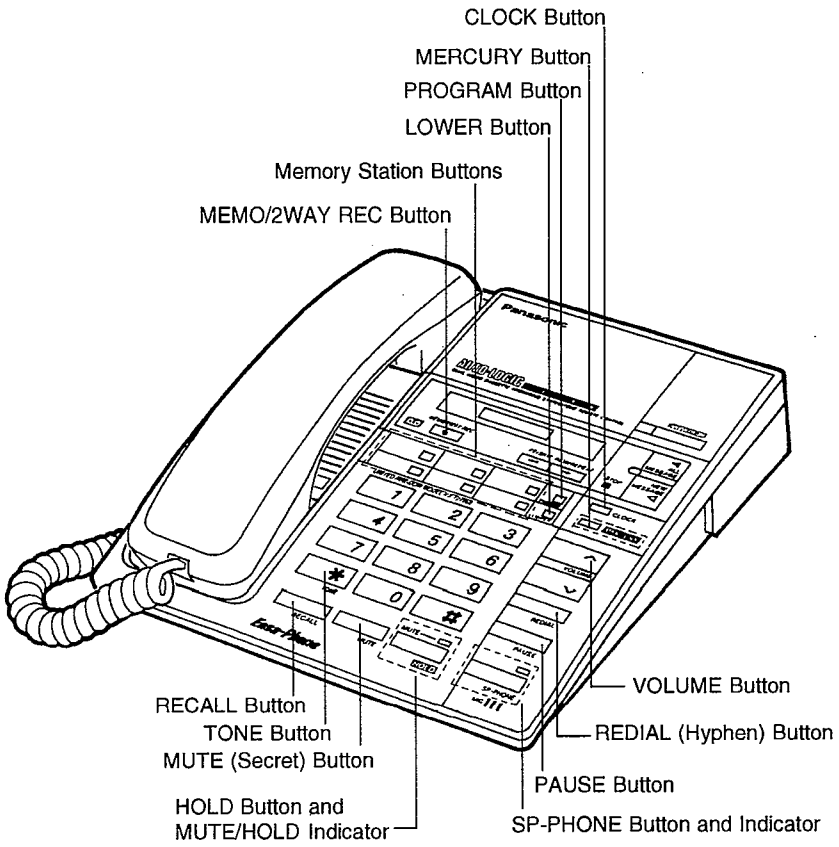


Fig. 1

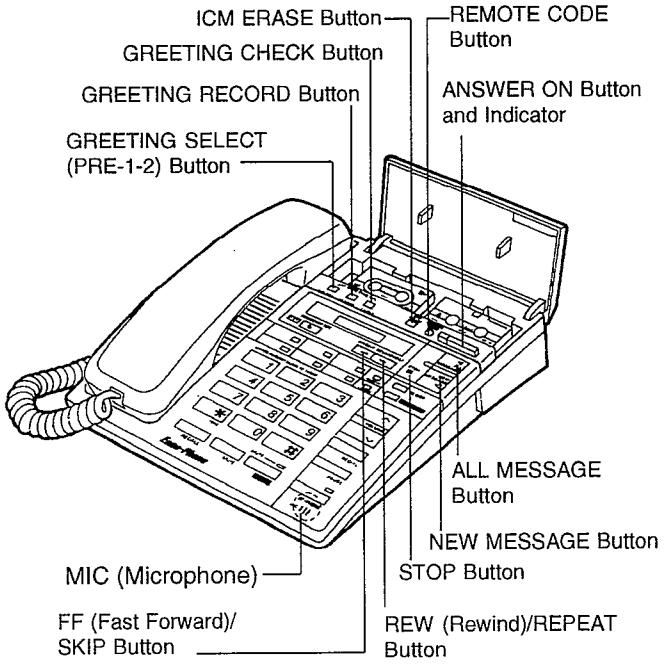


Fig. 2

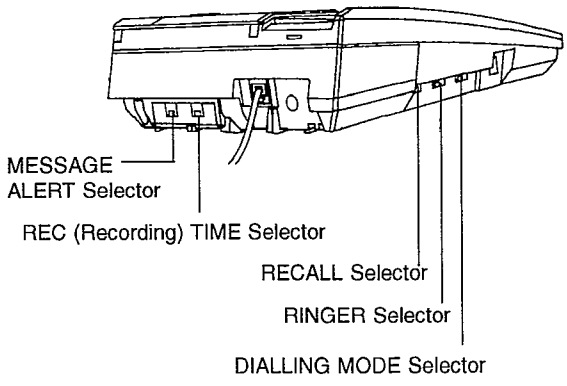
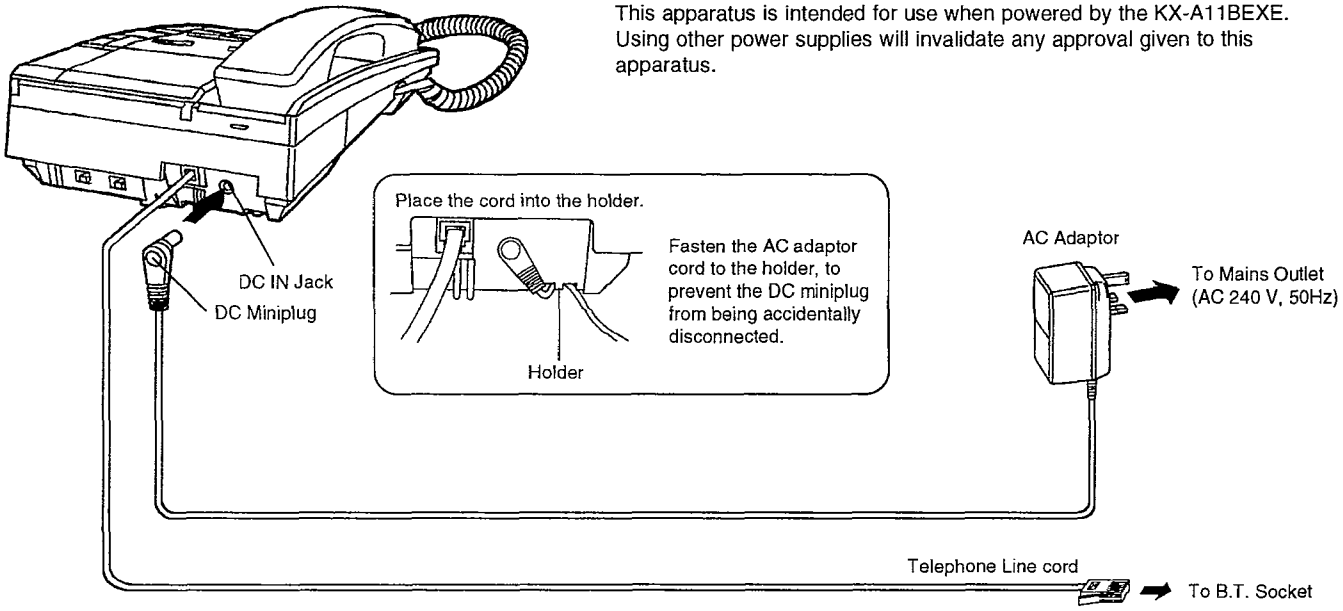


Fig. 3

CONNECTION



CONNECTION OF POWER SUPPLY
This apparatus is intended for use when powered by the KX-A11BEXE. Using other power supplies will invalidate any approval given to this apparatus.

This connection is England version only.

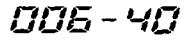
Refer to the simplified manual (cover) for other areas.

Notes:
—USE ONLY Panasonic AC ADAPTOR KX-A11BEXE. The adaptor must remain connected at all times.
—During a power failure, the apparatus functions only as an ordinary telephone.
—The DC IN Jack is at SELV (Safety Extra Low Voltage).
—The handset and line connections are at TNV (Telecommunication Network Voltage).

Fig. 4

DISPLAY

This display shows all possibilities.



During a conversation, the call duration is displayed. (Example: 6 minutes 40 seconds)

The clock adjusting procedure is shown.

The storing procedure of the phone number is shown.

The unit is in programming mode.

The LOWER station is selected.

The unit has a call on hold.

You are adjusting the volume. The number of the "■" shows the volume level.

26 messages have been recorded. The display shows up to 30 messages.

The REC TIME selector is set to the GREETING ONLY position.

The PAUSE button is pressed.

The RECALL button is pressed while storing numbers when the RECALL selector is in the "T BR" position.

"#" is pressed when the dialling mode is TONE.

" ✳ " is pressed when the dialling mode is TONE.

The MERCURY button is pressed.

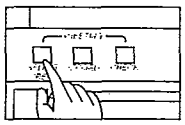
The incoming tape is full ("13" represents the number of messages recorded, for example).

NEW FEATURES

Pre-recorded greeting messages

The unit has two pre-recorded greeting messages.

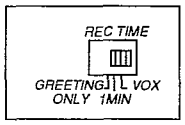
To select the pre-recorded greeting message



Press the GREETING SELECT (PRE-1-2) button to select the pre-recorded message.

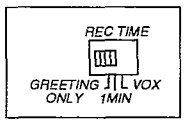
—Display shows: GREETING Pr

—The pre-recorded greeting message is played back automatically.



When the **REC TIME** selector is in the **VOX** or **1MIN** position:

Pre-recorded greeting message 1 is selected.
"Hello, we are not available now. Please leave your name and phone number after the beep. We will return your call."



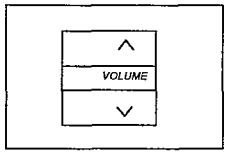
When the **REC TIME** selector in the **GREETING ONLY** position:

Pre-recorded greeting message 2 is selected.
"Hello, we are not available now. Please call again. Thank you for your call."

Note:
—If there is no room left on the incoming message tape to record the next caller's message, the "GREETING ONLY" mode is selected and the pre-recorded greeting message 2 will be played automatically for the caller. No incoming messages will be recorded.

To adjust the speaker's volume

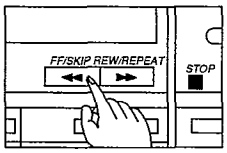
You can adjust the volume level of the speaker using the VOLUME button during a conversation. 9 levels are available (0 through 8).



To increase the volume, press ∧.
To decrease the volume, press ∨.

—The number of "▣" on the display indicates the volume level for about 3 seconds.
—After hanging up, the selected volume level is maintained.

To skip the message during playback

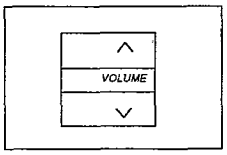


Press the FF/SKIP button.

—The unit forwards the tape to the beginning of the next message and starts playback again.

Monitoring incoming calls

While an incoming call is being recorded, you can monitor the caller's voice through the speaker and answer it if you want.



Adjust the volume using the VOLUME button.

Helpful hint:
—To answer the call while monitoring, lift the handset and talk. The unit stops recording.

Setting the greeting monitor function

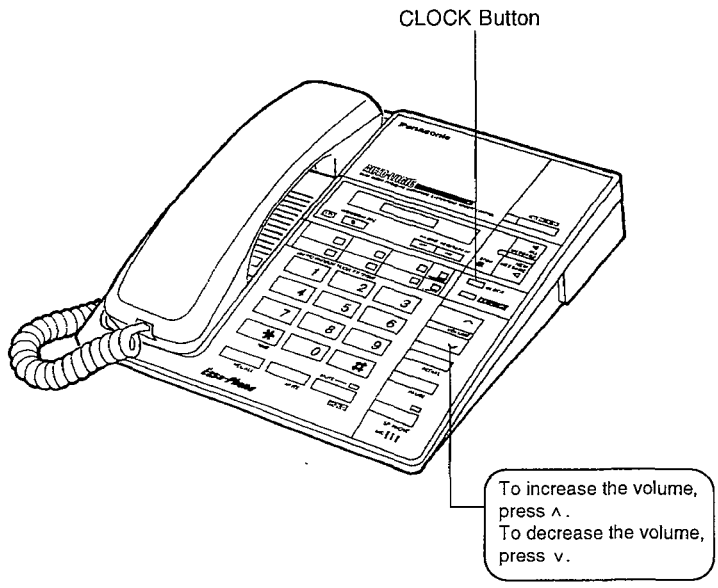
When the greeting message is played back to the caller, you may also hear it through the speaker of the unit.
Program as follows:

1. Press the PROGRAM button.
2. Press the HOLD button.
3. Press "4", then press "2" to set the monitor function.

   If you do not want to hear the greeting message, press "1" instead of "2".
4. To finish programming, press the PROGRAM button.

OPERATIONS

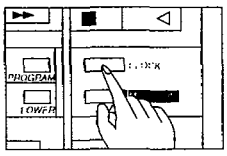
Time and day adjustment



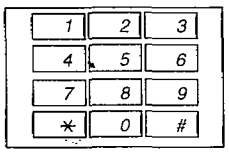
Notes:
—During a power failure, the programmed time and day retention time is approximately 3 hours.
—If "AM12-00" flashes, it means that the programmed time and day have been cleared. In this case, adjust the time and day again.
—The accuracy of the clock will be approximately ±45 seconds a month at room temperature.

Voice Time and Day Stamp
You know when a caller's message was recorded as the synthesized voice will announce the time and day of recording after each message.

Be sure that the handset is on the cradle and the SP-PHONE indicator light is off.

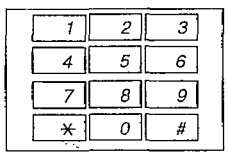
1 

Press the CLOCK button.
—" TIME SET - 1-4 1-2 - CLOCK " is displayed to show the programming procedure.
—The unit announces the current time and day.

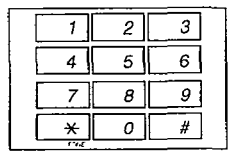
2 

Enter the current time (hour and minute) by using 4-digit numbers.

Ex.: To set "6:30", enter "0630".

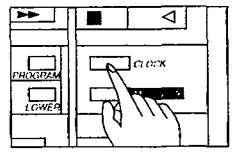
3 

Press " ✳ " to select "AM" or "PM" on the display.

4 

Press "#" repeatedly to adjust the day.

—The unit announces the day.

5 

Press the CLOCK button to finish adjusting.

—The unit announces the programmed time and day.
—The clock starts working.

DISASSEMBLY INSTRUCTIONS

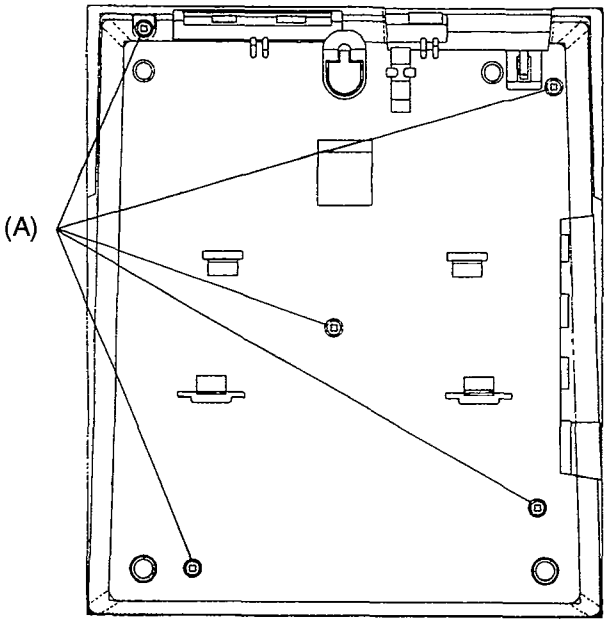


Fig. 5

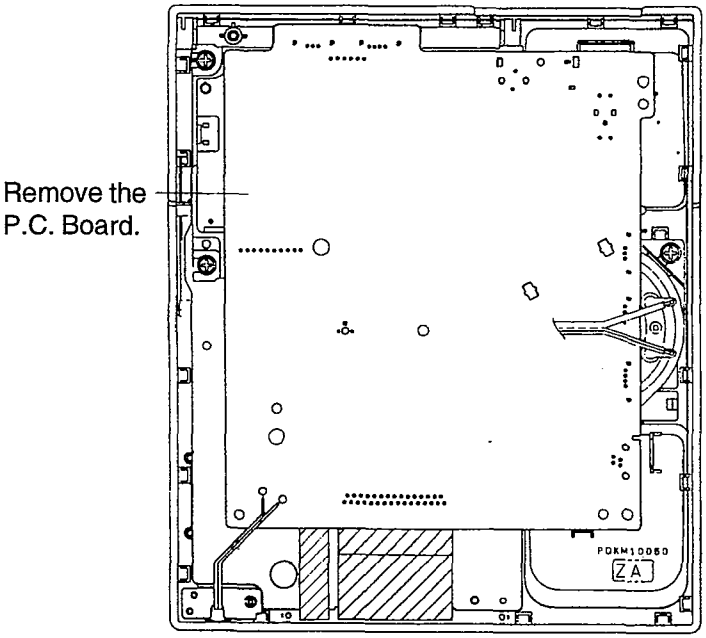


Fig. 6

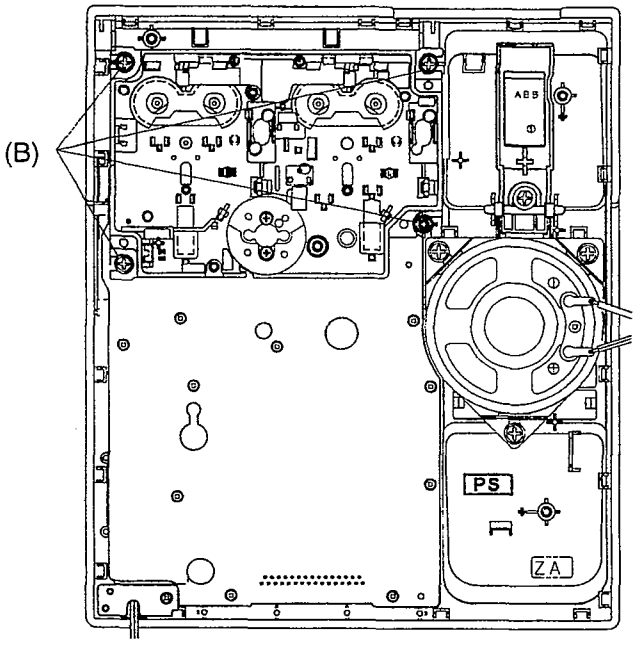


Fig. 7

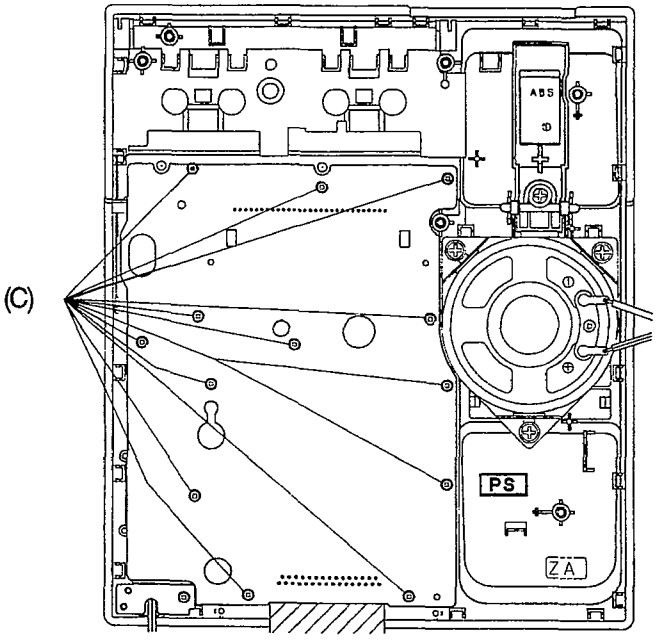
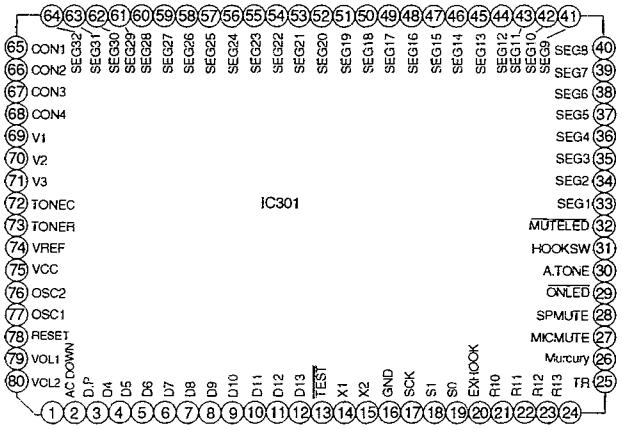


Fig. 8

Ref.No.	Procedure	Shown in Fig.—	To remove —.	Remove —.
1	1	5	Lower Cabinet	Screws (3×16) ..... (A)×5
2	1~2	6	Main P.C. Board	Remove the P.C. Board
3	1~3	7	Cassette Deck	Screws (3×13) ..... (B)×4
4	1~4	8	Operation P.C. Board	Screws (2.6×8) ..... (C)×13

CPU DATA



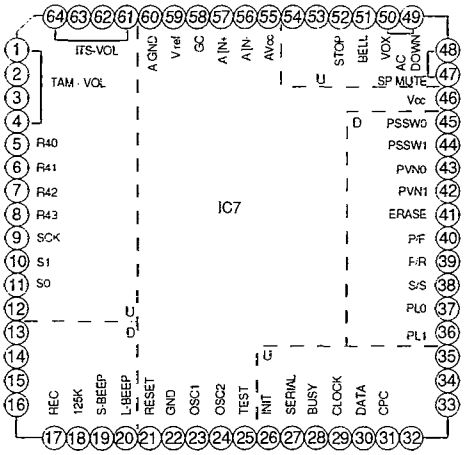
(ITS)
Part No.: PQVI4618B02F (IC301)
Power Supply: 5±0.1V
Program ROM: 8K×10 bit
Inside Data RAM: 1184× 4 bit

Pin No.	Port Name	Function	High	Low
1	Power Down	AC Down Input	AC power O	AC power X
2	DP	Dial Pulse Output	Make (H-imp.)	Break
3~8	D4~D9	Key Switch Strob Input	Normal	Active
9~11	D10~D12	Key Switch Input	Normal	Active
12	Stop	Stop Input	Stop	Move
17	SCK	Serial Clock Input		
18	SI	Serial Data Input		
19	SO	Serial Data Output		
20	EX-Hook	Detect the parallel connection	OFF-Hook	ON-Hook
21~24	R10~R13	Key Input	Normal	Active
25	TR	Tip-Ring Control Output	ON	OFF
26	Mercury		Output the Mercury	Don't output the Mercury
27	MIC Mute	Transmission Mute Output	ON	OFF
28	SP Mute	Reception Mute Output	ON	OFF
29	ON LED	SP-Phone LED Output	OFF	ON
30	Audible Tone	Key Tone Output		Normal
31	Hook Switch	Hook Switch Input	ON-Hook	OFF-Hook
32	Mute LED	Mute LED Output	OFF	ON
41~64	Segment9~32	LCD Segment Output		
65~68	Common1~4	LCD Common Output		
72	Tone C	DTMF Output		Normal
73	Tone R	DTMF Output		Normal
79	LCD 1	LCD Contrast Output	(H) (M) (L)	
80	LCD 2	LCD Contrast Output	LCD1 L H H	
			LCD2 H L H	

● Pin Description

Pin No.	Part Name	Name	I/O	Description
75	Power supply	V_{CC}	I	Connect to the power supply.
16		GND	I	Connect to GND.
13	Test	$\overline{TEST}$	I	Not for a user application. Connect to V_{CC}.
78	Reset	RESET	I	When this is at high level, MCU is reset.
76	Oscillation	OSC_1	I	I/O terminals for the internal oscillator. Connect the ceramic filter or the external oscillator circuit.
77		OSC_2	O	
14		X1	I	Oscillator for clock connecting to the crystal oscillator of 32.768 kHz.
15		X2	O	
79,80,1~8	Port	D0~D9	I/O	I/O port for addressing every 1 bit. Output terminals D0~D9 for large electric current of 16 mA at maximum. Terminals D11~ D13 are used as voltage comparators.
9~12		D10~D13	I	
17~32		R0~R3	I/O	I/O port for addressing every 4 bits. $R0_0$~$R0_2$, $R3_1$~$R3_3$ are shared with SCK, SI, SO, TIM0, INT0 and INT1.
31	Interrupt	$\overline{INT0}$	I	External interrupt input terminal.
32		$\overline{INT1}$	I	
17	Serial	$\overline{SCK}$	I/O	SCI clock I/O terminal.
18		SI	I	SCI data reception input terminal.
19		SO	O	SCI data transmission output terminal.
30	Timer	TIM0	O	Square output terminal (duty-variable).
69~71	LCD	V1,V2,V3	I	Power supply terminal for liquid crystal driver. The power supply split resistor is built in for normal open circuit. The power supply condition is V_{CC}, V1, V2, V3 and GND.
65~68		COM1~COM4	O	Common signal terminal for LCD.
33~64		SEG1~SEG32	O	Segment signal terminal for LCD.
73	DTMF	TONER	O	Output terminal of DTMF signal of ROW.
72		TONEC	O	Output terminal of DTMF signal of COLUMN.
74		VTref	I	Standard level power supply of DTMF output. Apply V_{CC} VTref GND.
11	Voltage Comparator	COMP0	I	Analog input terminal for the voltage comparator.
12		COMP1	I	
10		VCref	I	Standard voltage terminal for inputting the threshold voltage of the analog input terminal.

Note: I = Input O = Output



(TAM)
Part No.: PQVI4678A32H (IC7)
Power Supply: 4.5~5.5V
Program ROM: 8K×10 bit
Inside Data RAM: 512× 4 bit

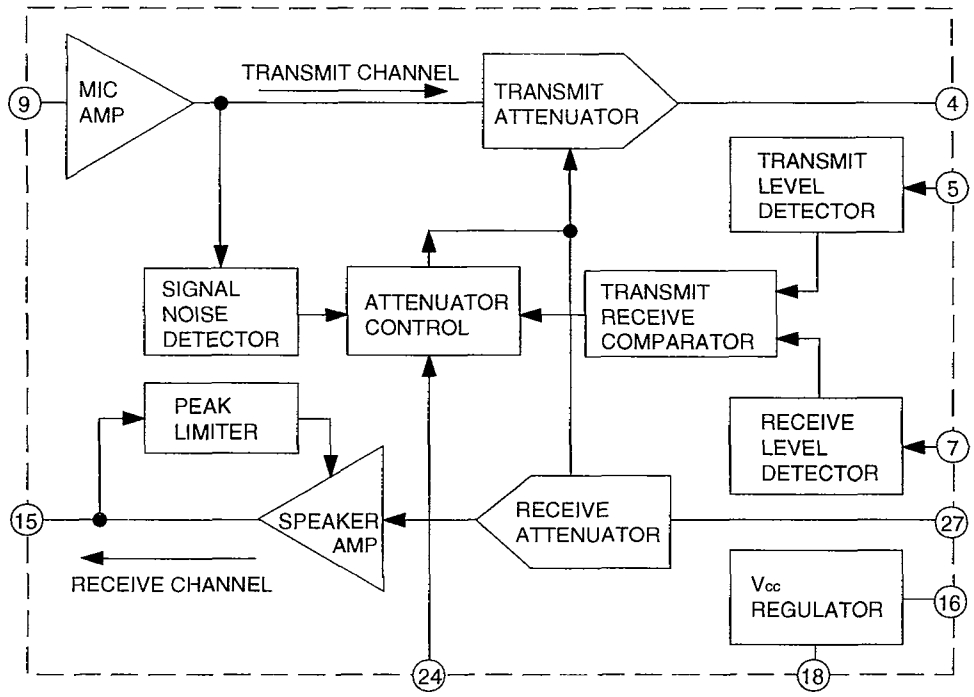
Pin No.	Port Name	High	Low	Pin No.	Port Name	High	Low
1~4	TAM Volume			32	Strob Option		Active
5	In OGM Play All Playback		ON	33	Vox Sens	High	Low
				34	IN Use LED	LED OFF	LED ON
6	In OGM Record New Playback		ON	35	Answer LED	LED OFF	LED ON
				36	Plunger-ICM	LED OFF	LED ON
7	In OGM Select Answer		ON	37	Plunger-Greeting	ON	
				38	Play Motor	ON	
8	In Erase Stop		ON	39	FF Motor	ON	
9	SCK			40	Rew Motor	ON	
10	SI			41	Erase	ON	
11	SO			42	RVN-ICM		
12	Strob Option		Active	43	RVN-Greeting		
13	Strob Key		Active	44	Position SW-ICM	Newtral	
14	Strob Key		Active	45	Position SW -Greeting	Newtral	
15	Strob Option		Active				
16	Strob Option		Active	46	Vcc		
17	Record Bias	ON		47	SP- MUTE	ON	OFF
18	Power Supply for ITS			48	SP/HS	SP-Phone	Handset
19	Head/ S Beet			49	AC Down		AC Down
20	Line Beep			50	Vox		Vox
21	Reset	Reset		51	Bell		Bell
22	GND			52	Stop	Stop	
23	Oscillator 1			53	MIC -MUTE	ON	OFF
24	Oscillator 2			54	Not Used		
25	Test			55	A VCC		
26	INIT	TI-IC Active		56	A IN -		
27	Serial			57	A IN +		
28	Busy	TI-IC Busy	Not -Busy	58	GC		
29	Clock			59	VREF		
30	Data			60	A GND		
31	CPC		CPC	61~64	ITS Volume		

● Pin Description

Pin No.	Part Name	Name	I/O	Description
46	Power supply	V_{CC}	—	Applies voltage of 5 V±10%.
22		GND	—	Connect to GND.
25	Test	$\overline{TEST}$	—	Not for a user application. Connect to V_{CC}.
21	Reset	RESET	I	For resetting the MCU.
23, 24	Oscillation	OSC_1,OSC_2	I	Input terminal to the internal oscillator. For connecting to the liquid crystal or the external oscillator circuit.
26~35	Port	D0~D9	I/O	I/O port for addressing every 1 bit. The large electric current sink terminal with the pull-up MOS.
36~41		D10~D15	I/O	I/O port for addressing every 1 bit. The large electric current source terminal with the pull-down MOS.
1~20 47~54 61~64		$R0_0$~$T7_3$	I/O	I/O port for addressing every 4 bits. Terminals $R0_0$~$R5_3$ are with the pull-up MOS. R60~R83 are with the pull-down MOS.
42~45		$R8_0$~$R8_3$	I	Input port for addressing every 4 bits. The standard terminal with the pull-down MOS.
3, 4, 15, 16	Interrupt	$\overline{INT0}$~$\overline{INT3}$	I	External interrupt input terminal. Terminals INT0~INT3 are shared with $R3_2$, $R3_3$/TIB, $R6_2$/TIC, $R6_3$/TID terminal.
5, 9	Serial communication interface	$\overline{SCKA}$, $\overline{SCKB}$	I/O	Clock I/O terminal for SCIA and SCIB.
6, 10		SIA, SIB	I	Data reception input terminal for SCIA and SCIB.
7, 11		SOA, SOB	O	Data transmission output terminal for SCIA and SCIB.
4, 15, 16	Timer	TIB, TIC, TID	I	External clock input terminal for timer B, C and D. Terminals TIB, TIC and TID are shared with $R3_3$/INT1, $R6_2$/INT2 and $R6_3$/INT3 terminals respectively.
17, 18, 19, 20		TOB, TOC, TOD_1, TOD_2	O	External clock output terminal for timer B, C and D. Terminals TOB, TOC and TOD are shared with $R7_0$, $R7_1$, $R7_2$ and $R7_3$ terminals respectively.
55	DTMF receiver	AV_{CC}	—	Power supply terminal for the DTMF receiver analog block. Make connection near the power supply to get the same electric potential of V_{CC}. Use the stabilized power supply.
60		AGND	—	Power supply terminal for the DTMF receiver analog block. Make connection near the power supply to get the same electric potential of V_{CC}.
59		Vref	—	GND level of the DTMF receiver analog block. Apply the stabilized voltage of $AV_{CC}/2$.
57,56		AIN+,AIN-	I	Input terminal of the DTMF receiver signal. The AIN+ is input into the non inversion input of the DTMF receiver's first OPE AMP. The AIN- is input into the inversion input.
58		GC	O	Gain regulation terminal for the DTMF receiver.
45	Reset voltage variable circuit	Rref	I	Standard voltage input terminal for inputting the threshold voltage of the reset voltage variable circuit. The Rref terminal is shared with the R83 terminal.
44		R_{IN}	I	Analog input terminal for the reset voltage variable circuit. The R_{IN} terminal is shared with the R82 terminal.

Note: I = Input O = Output

SPEAKERPHONE IC DATA



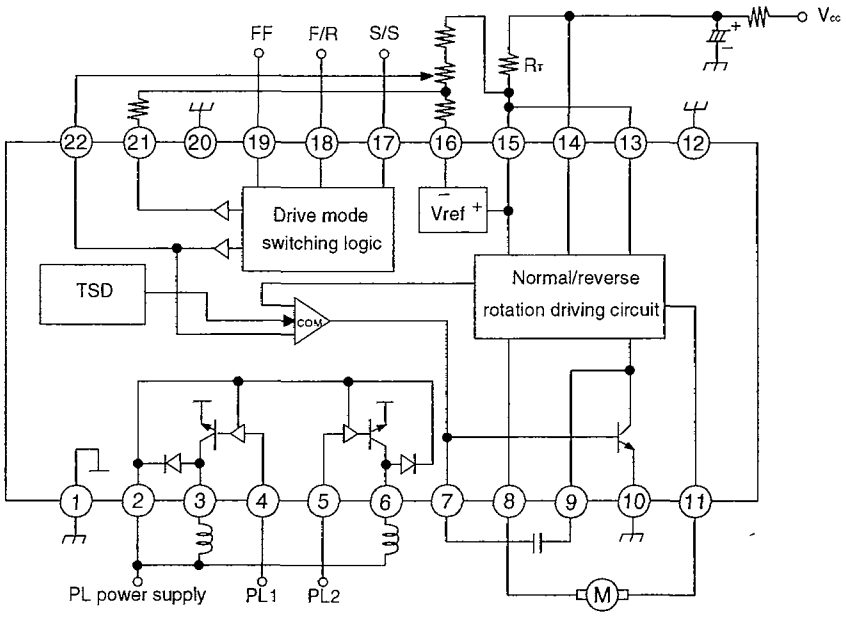
Part No.: PQVISC77655S (IC2)

●Pin Description

Pin No.	Name	Description
1	RR	A resistor to ground provides a reference current for the transmit and receive attenuators.
2	RTX	A resistor to ground determines the nominal gain of the transmit attenuator. The transmit channel gain is inversely proportional to the RTX resistance.
3	TXI	Input to the transmit attenuator. Input resistance is nominally 5.0 kohms.
4	TXO	Output of the transmit attenuator. The TXO output signal drives the input of the transmit level detector, as well as the external circuit which drives the telephone line.
5	TLI	Input of the transmit level detector. An external resistor ac coupled to the TLI pin sets the detection level. Decreasing this resistor increases the sensitivity to transmit channel signals.
6	TLO	Output of the transmit level detector. The external resistor and capacitor set the time the comparator will hold the system in the transmit mode after speech ceases.
7	RLI	Input of the receive level detector. An external resistor ac coupled to the RLI pin sets the detection level. Decreasing this resistor increases the sensitivity to receive channel signals.
8	RLO	Output of the receive level detector. The external resistor and capacitor set the time the comparator will hold the system in the receive mode after the receive signal ceases.
9	MCI	Microphone amplifier input. Input impedance is nominally 10 kohms and the dc bias voltage is approximately equal to VB.
10	MCO	Microphone amplifier output. The mic amp gain is internally set at 34 dB (50 V/V).
11	CP1	A parallel resistor and capacitor connected between this pin and V_{cc} holds a voltage corresponding to the background noise level. The transmit detector compares the CP1 voltage with the speech signal from CP2.
12	CP2	A capacitor at this pin peak detects the speech signals for comparison with the background noise level held at CP1.

Pin No.	Name	Description
13	XDI	Input to the transmit detector system. The microphone amplifier output is ac coupled to the XDI pin through an external resistor.
14	SKG	High current ground pin for the speaker amp output stage. The SKG voltage should be within 10 mV of the ground voltage at Pin 22.
15	SKD	Speaker amplifier output. The SKO pin will source and sink up to 100 mA when ac coupled to the speaker. The speaker amp gain is internally set at 34 dB (50 V/V).
16	V+	Input dc supply voltage. V+ can be powered from Tip and Ring if an ac decoupling inductor is used to prevent loading ac line signals. The required V+ voltage is 6.0 to 11V (7.5V nominal) at 7.0 mA.
17	AGC	A capacitor from this pin to VB stabilizes the speaker amp gain control loop, and additionally controls the attack and decay time of this circuit. The gain control loop limits the speaker amp input to prevent clipping at SKO. The internal resistance at the AGC pin is nominally 110 kohms.
18	$\overline{CS}$	Digital chip select input. When at a Logic "0" (<0.7V) the V_{cc} regulator is enabled. When at a Logic "1" (>1.6V), the chip is in the standby mode drawing 0.5mA. An open $\overline{CS}$ pin is a Logic "0". Input impedance is nominally 140 kohms. The input voltage should not exceed 11 V.
19	SKI	Input to the speaker amplifier. Input impedance is nominally 20 kohms.
20	V_{cc}	A 5.4 V regulated output which powers all circuits except the speaker amplifier output stage. V_{cc} can be used to power external circuitry such as a microprocessor (3.0 mA max). A filter capacitor is required. The MC34018 can be powered by a separate regulated supply by connecting V+ and V_{cc} to a voltage between 4.5 V and 6.5 V while maintaining $\overline{CS}$ at a Logic "1".
21	VB	An output voltage equal to approximately $V_{cc}/2$ which serves as an analog ground for the speakerphone system. Up to 1.5 mA of external load current may be sourced from VB. Output impedance is 250 ohms. A filter capacitor is required.
22	Gnd	Ground pin for the IC (except the speaker amplifier).
23	XDC	Transmit detector output. A resistor and capacitor at this pin hold the system in the transmit mode during pauses between words or phrases. When the XDC pin voltage decays to ground, the attenuators switch from the transmit mode to the idle mode. The internal resistor at XDC is nominally 2.6 kohms.
24	VLC	Volume control input. Connecting this pin to the slider of a variable resistor provides receive mode volume control. The VLC pin voltage should be less than or equal to VB.
25	ACF	Attenuator control filter. A capacitor connected to this pin reduces noise transients as the attenuator control switches levels of attenuation.
26	RXO	Output of the receive attenuator. Normally this pin is ac coupled to the input of the speaker amplifier.
27	RXI	Input of the receive attenuator. Input resistance is nominally 5.0 kohms.
28	RRX	A resistor to ground determines the nominal gain of the receive attenuator. The receive channel gain is directly proportional to the RRX resistance.

GOVERNOR IC DATA

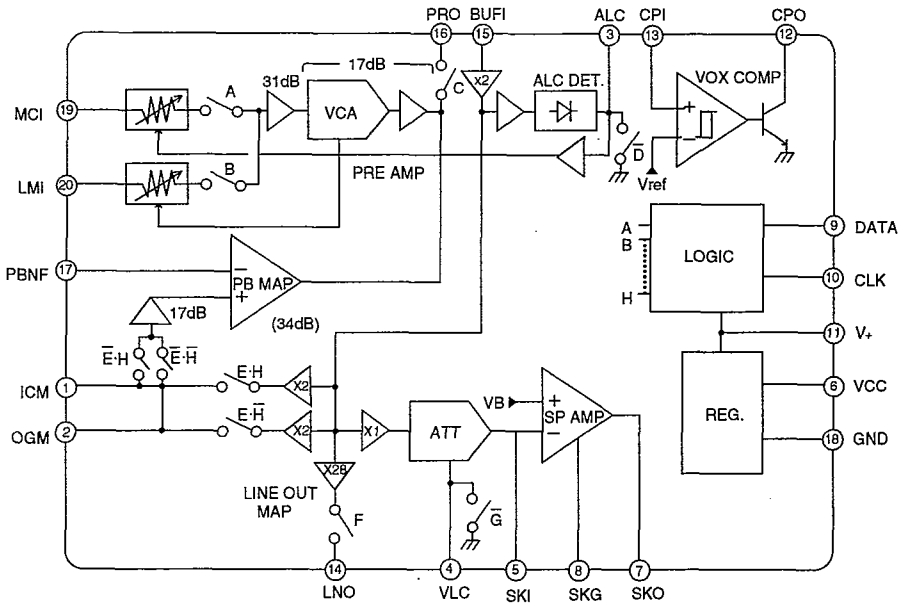


Part No.: AN6658K (IC4)

● Pin Description

Pin No.	Description	Pin No.	Description
1	GND	12	NC
2	PL power supply	13	To Pin 15
3	PL1 driving terminal	14	V_{CC}
4	PL1 setting terminal	15	For setting of load characteristics
5	PL2 setting terminal	16	Reference voltage output terminal
6	PL2 driving terminal	17	Start/stop control terminal
7	Phase compensation terminal 1	18	Normal/reverse rotation control terminal
8	Motor driving terminal (-)	19	Constant speed/FF control terminal
9	Phase compensation terminal 2	20	NC
10	GND	21	FF setting terminal
11	Motor driving terminal (+)	22	Speed adjustment terminal

RECORD/PLAY AMP IC DATA



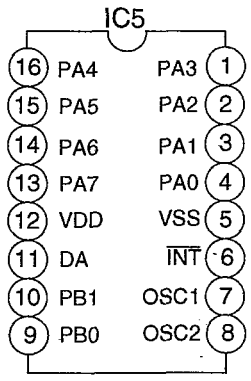
Part No.: PQVISC111812 (IC5)

● Pin Description

Pin No.	Name	Description
1	ICM	I/O for ICM head. I/O impedance is approximately 20 kohm that keeps high impedance sufficient for head load.
2	OGM	I/O for OGM head. The same configuration as ICM.
3	ALC	For connection to CR for ALC detection smoothing. The time constant of the CR decides the recovery time. The attack time depends on the values of C and internal resistance (approx. 8.5 kohm).
4	VLC	Volume control input. The speaker output controlled by changing the volume resistance between this pin and GND.
5	SKI	Reverse input of the speaker amplifier. The gain and frequency characteristics are set by external CR. Non-reverse input is biased by internal power source (approx. 1/2V_{CC}).
6	V_{CC}	Power source of IC except LOGIC part.
7	SKO	Output of speaker amplifier. Sets frequency characteristics by connecting to Pin 5 in parallel. Speaker's impedance is normally 30 ohms.
8	SKG	GND of speaker amplifier output part.
9	DATA	Input of control data for mute mode. For serial synchronous input with clock signal.
10	CLK	Clock input for data input sychronization. Controls shift register by data bit at fall, and latches by reading data at rise.
11	V+	5.4 V stable output to supply bias with microphone.
12	CPO	Output of comparator. Connected to open-collector of NPN transistor.

Pin No.	Name	Description
13	CPI	Input of VOX detector comparator. Compares internal reference voltage with gained voltage, and has a bit hysteresis characteristics.
14	LNO	Output of buffer amplifier for line output. Radio amplifier.
15	BUFI	Inputs of Recording amplifier, line output amplifier, speaker amplifier, and ALC detector. These are input after voltage/radio conversion by CR between this pin and Pin 16.
16	PRO	Output of MIC/LINE amplifier and playback amplifier.
17	PBNF	Reverse input of playback amplifier for controlling frequency characteristics. The CR network between this pin and Pins 16 and 18 set frequency and gain.
18	GND	GND for all ICs except speaker amplifier.
19	MCI	Input of microphone amplifier. The input resistance is normally 33 khoms.
20	LNI	Input of line amplifier. The same configuration as MCI.

VOICE SYNTHESIZED IC DATA



Part No.: PQVICS11160N (IC6)

● Pin Description

Pin No.	Name	Description
11	DA1	D/A output terminal
6	$\overline{INIT}$	Initialization terminal When INIT is at "L" level, the clock stops and CMS11160AN is set to the low power mode, the program counter is reset to "0", and then the contents of RAM is maintained. The INIT pulse of 1 µs or more is required to reset the processor.
7	OSC1	Clock input terminal Used to connect the crystal or ceramic oscillator between OSC1 and OSC2, or input the clock signal into OSC1. The clock frequency is 7.68 MHz.
8	OSC2	Clock return terminal
1-4, 13-16	PA0~PA7	8-bit bidirectional I/O port terminals In the parallel mode: Data input/READY output terminals In the serial mode: Extension output terminals
9-10	PB0~1	2-bit bidirectional I/O port terminals In the parallel mode: Read & write selector terminals/strobe terminals In the serial mode: Data input/BUSY output terminals
12	V_{DD}	5 V line voltage terminal
5	V_{SS}	GND terminal

IC BLOCK DIAGRAM

Part No.: PQVIUPC358C (IC3)

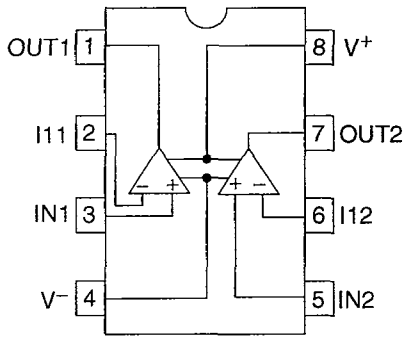


Fig. 10

ADJUSTMENT

Perform the following adjustment after replacing IC2 and VR2-VR4.

Test Equipment:

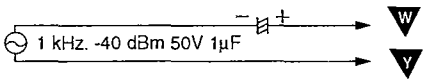
Loop Simulator
RC Oscillator
VTVM

Preparation:

1. Set unit's controls as follows:
   A. SP-PHONE SWITCH..."ON"
   B. VOLUME CONTROL..."MAX"
2. Set the variable resistor of the Loop Simulator to maximum resistance (fully counterclockwise).
3. Connect the unit to the Loop Simulator.
4. Make adjustment in a quiet room.

1. Transmission Level Adjustment (for Handset)

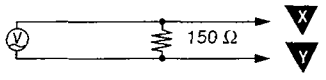
1. Loop Simulator "TX".
2. Connect the Oscillator to Test Point ▼Y (-)—▼W (+), as shown below.
3. Set RC Oscillator to 1 kHz, -40 dBm.



4. Connect the VTVM.
5. Adjust VR3 for a reading of -6.5 dBm ± 0.5 dBm on the VTVM.

2. Reception Level Adjustment (for Handset)

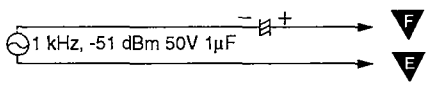
1. Loop Simulator "RX".
2. Apply the 1 kHz, -20 dBm for the Oscillator.
3. Connect the resistor 150 Ω to the test point ▼X - ▼Y, and connect the VTVM to the both ends.



4. Adjust VR4 for a reading of -25.5dBm ± 0.5 dBm on the VTVM.

3. Transmission Level Adjustment (for Speakerphone)

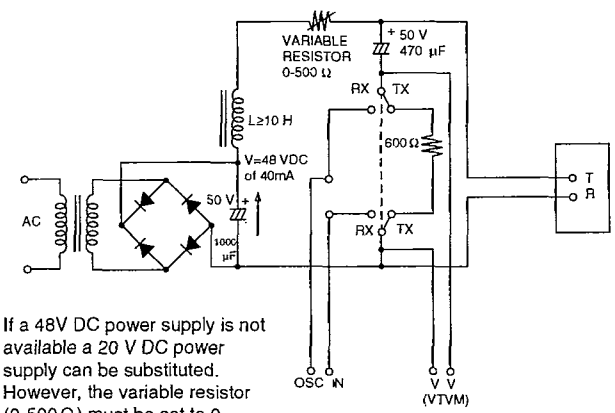
1. Connect the test points ▼A - ▼B.
2. Set the Loop Simulator selector switch to "TX".
3. Connect the RC Oscillator to Test Point ▼E (-) — ▼F (+), and connect an electrolytic capacitor (50 V, 1µF) as shown below.
4. Set RC Oscillator to 1 kHz, 51 dBm.



5. Connect the VTVM to test point ▼C — ▼D.
6. Adjust VR2 for a reading of -21.5 dBm ± 0.5 dBm on the VTVM.
7. Disconnect the test point ▼A — ▼B.

Please refer to Circuit Board and wiring Connection Diagram which is located test points (▼).

Schematic Diagram of Loop Simulator

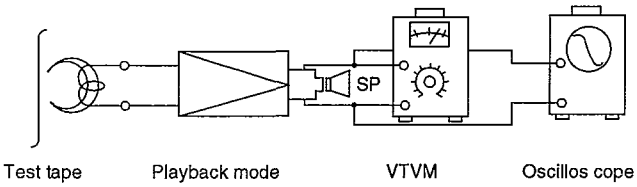
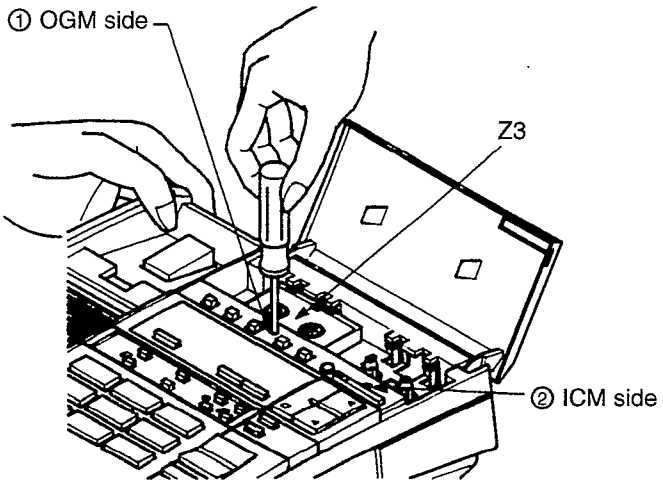
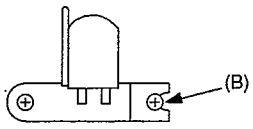
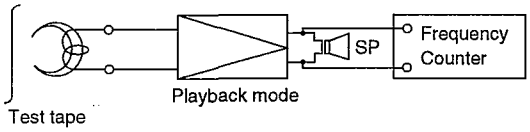
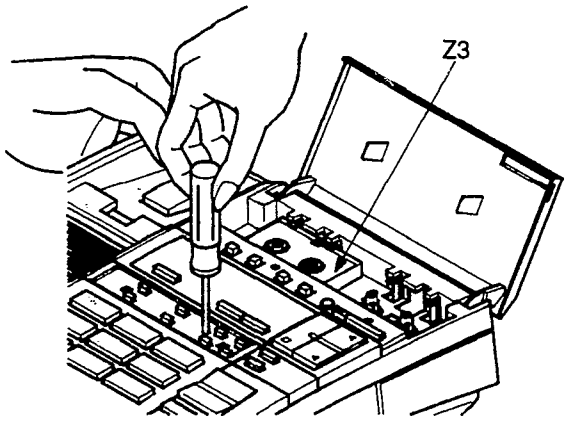


If a 48V DC power supply is not available a 20 V DC power supply can be substituted. However, the variable resistor (0-500 Ω) must be set to 0 ohms.

Fig. 11

MEASUREMENT AND ADJUSTMENT METHOD

Notes: 1. Make sure the heads are clean.
2. Make sure the capstan and pressure roller are clean.
3. Room temperature for measuring and adjusting: 20±5°C (68±9°F)
4. Test equipments are not treated as replacement parts.

ITEM	MEASUREMENT & ADJUSTMENT	REMARKES
1. Head azimuth adjustment	1. Play back the test tape (QZZMWA or PQZZLCT2401A) [Ref No. Z3]. 2. Adjust screw (B) shown in Fig. B for maximum output at SP terminal. (Test equipment connection is shown below.)  	*Record/playback head  Fig. B
2. Tape speed adjustment	1. Play back the test tape (QZZMWA or PQZZLCT2401A) [Ref No. Z3] 2. Adjust VR1 for 2980~3000 Hz on frequency counter reading.  	

HOW TO REPLACE FLAT PACKAGE IC

■ PREPARATION

- SOLDER ..... Sparkle Solder 115A-1, 115B-1
  OR
  Almit Solder KR-19, KR-19RMA

- Soldering iron ..... Recommended power consumption will between 30w to 40w.
  Temperature of Copper Rod 662 ± 50°F (350 ± 10°C)

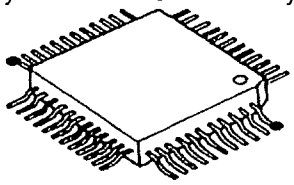
  (An expert may handle 60~80w iron, but beginner might damage foil by overheating)

- Flux ..... HI115 Specific gravity 0.863

  (Original flux will be replaced daily.)

■ PROCEDURE

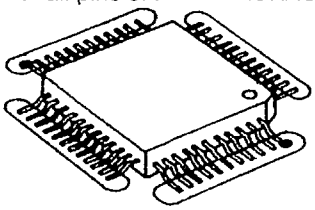
1. Temporary fix FLAT PACKAGE IC by Soldering on marked 2 pins.



●..... Temporary soldering point.

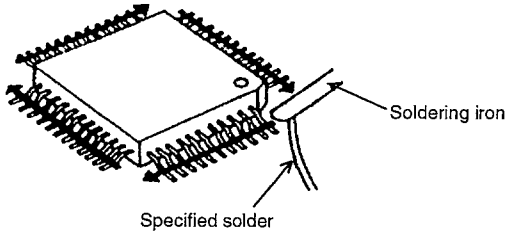
*Most important matter is accurate setting of IC to the corresponding soldering foil.

2. Apply flux for all pins of FLAT PACKAGE IC.



..... Flux

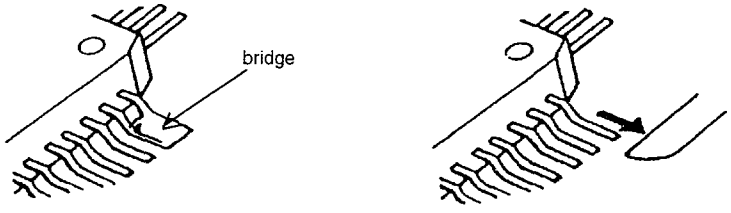
3. Solder employing specified solder to direction arrow, as slide the soldering iron.



■ MODIFICATION PROCEDURE OF BRIDGE

1. Re-solder slightly on bridging portion.

2. Remove remained solder along pins employing soldering iron as shown in below Figure.

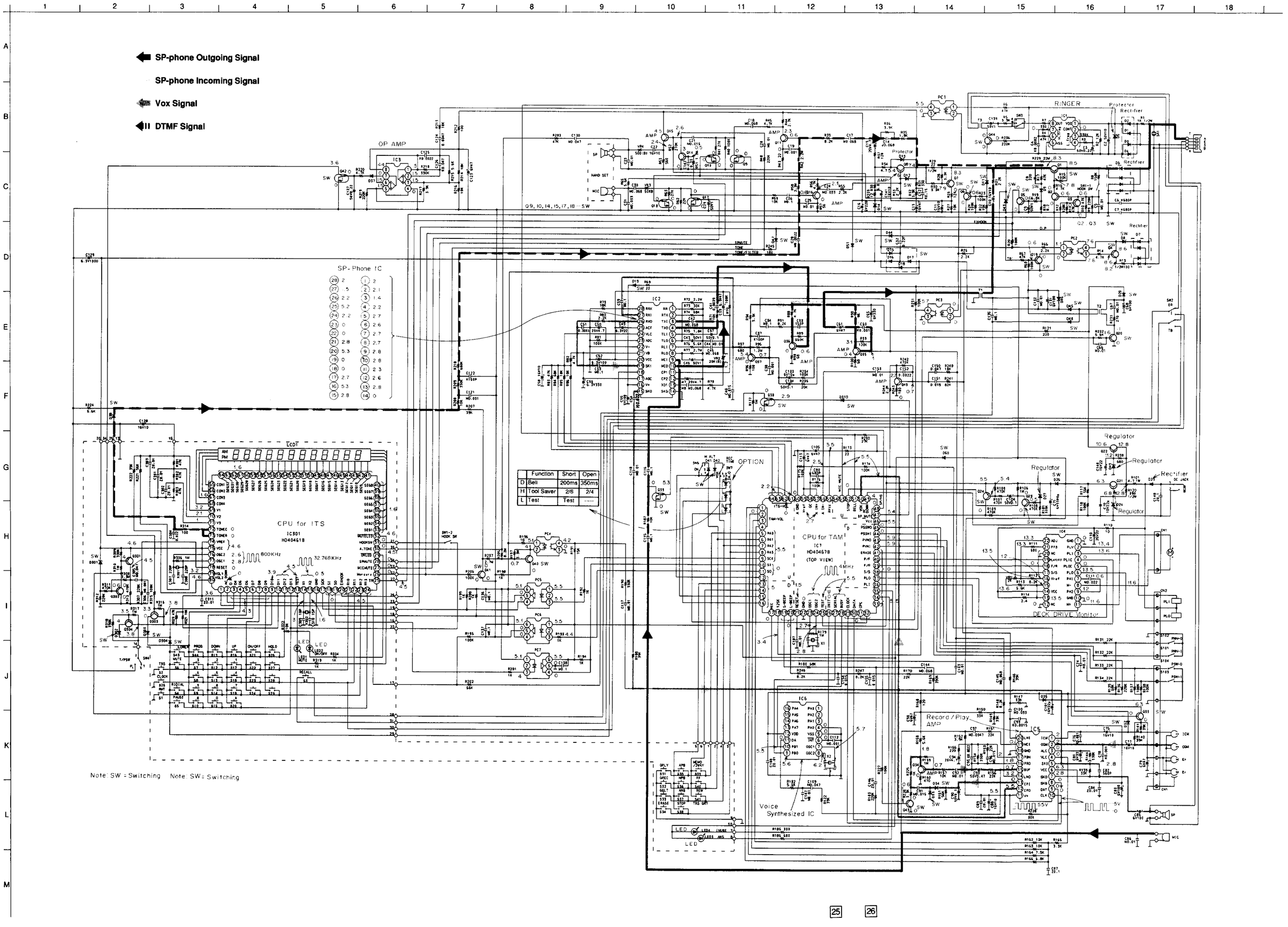


21

22

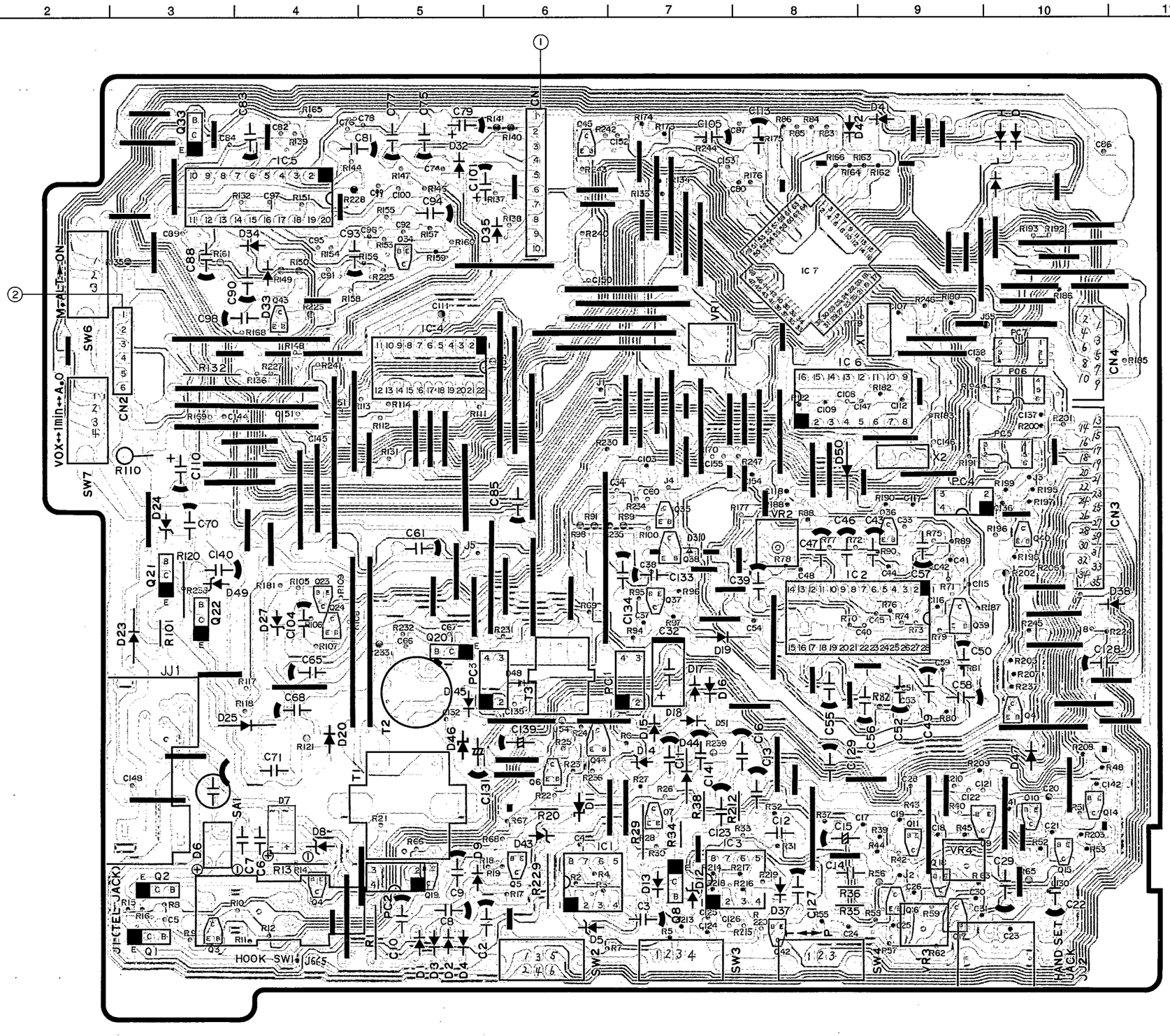
23

SCHEMATIC DIAGRAM



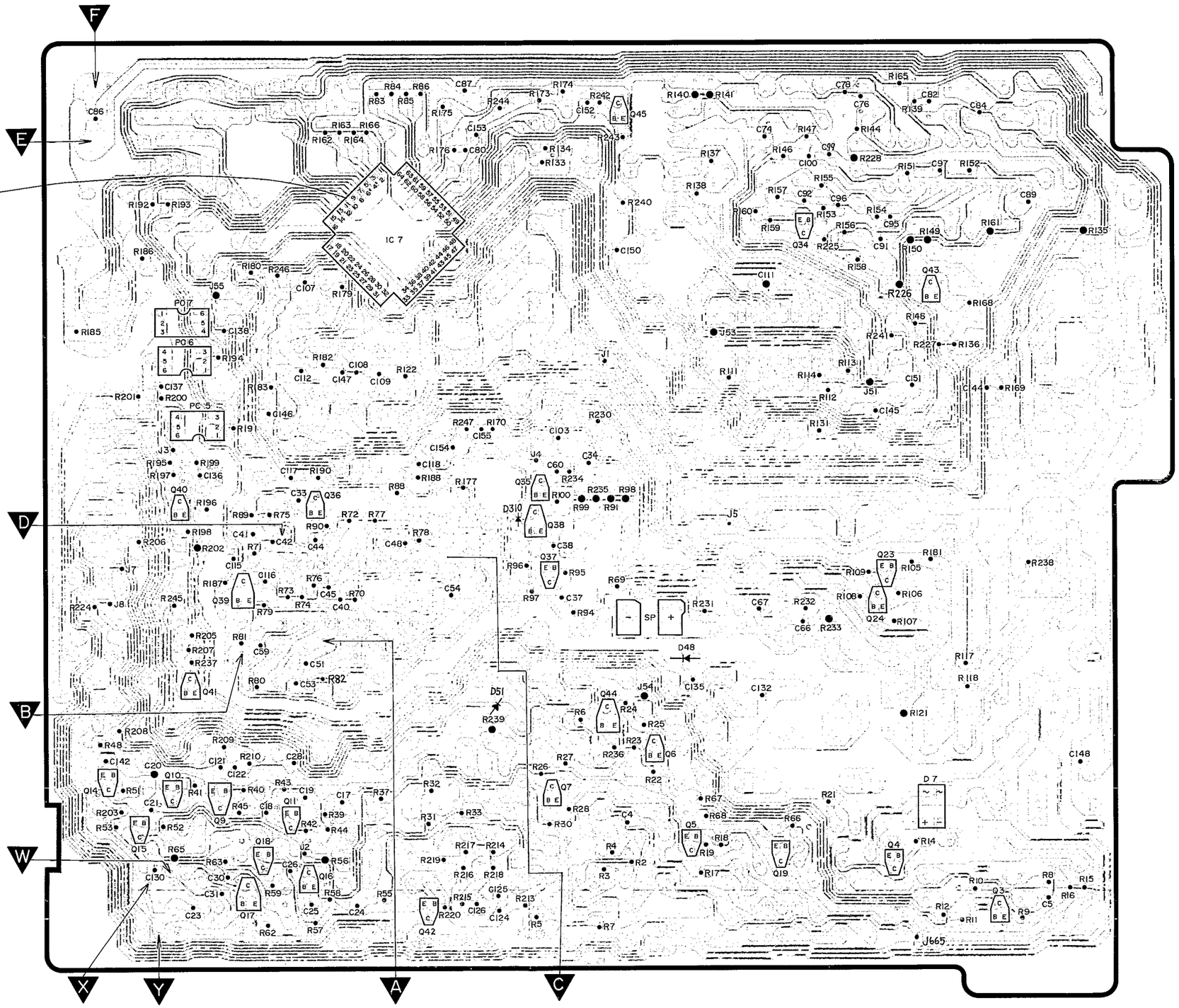
24 25 26

MAIN PRINTED CIRCUIT BOARD (COMPONENT VIEW)

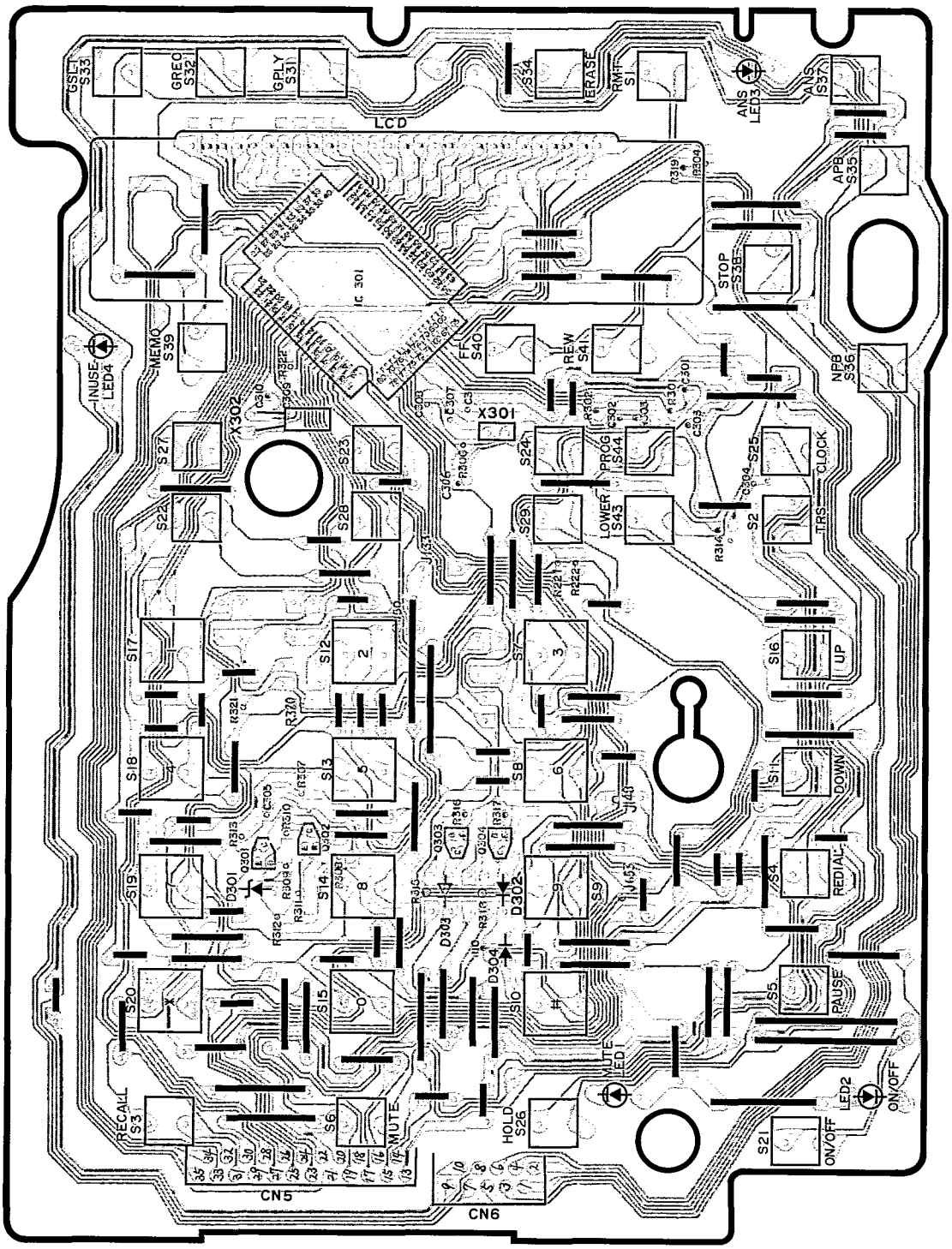


MAIN PRINTED CIRCUIT BOARD (BOTTOM VIEW)

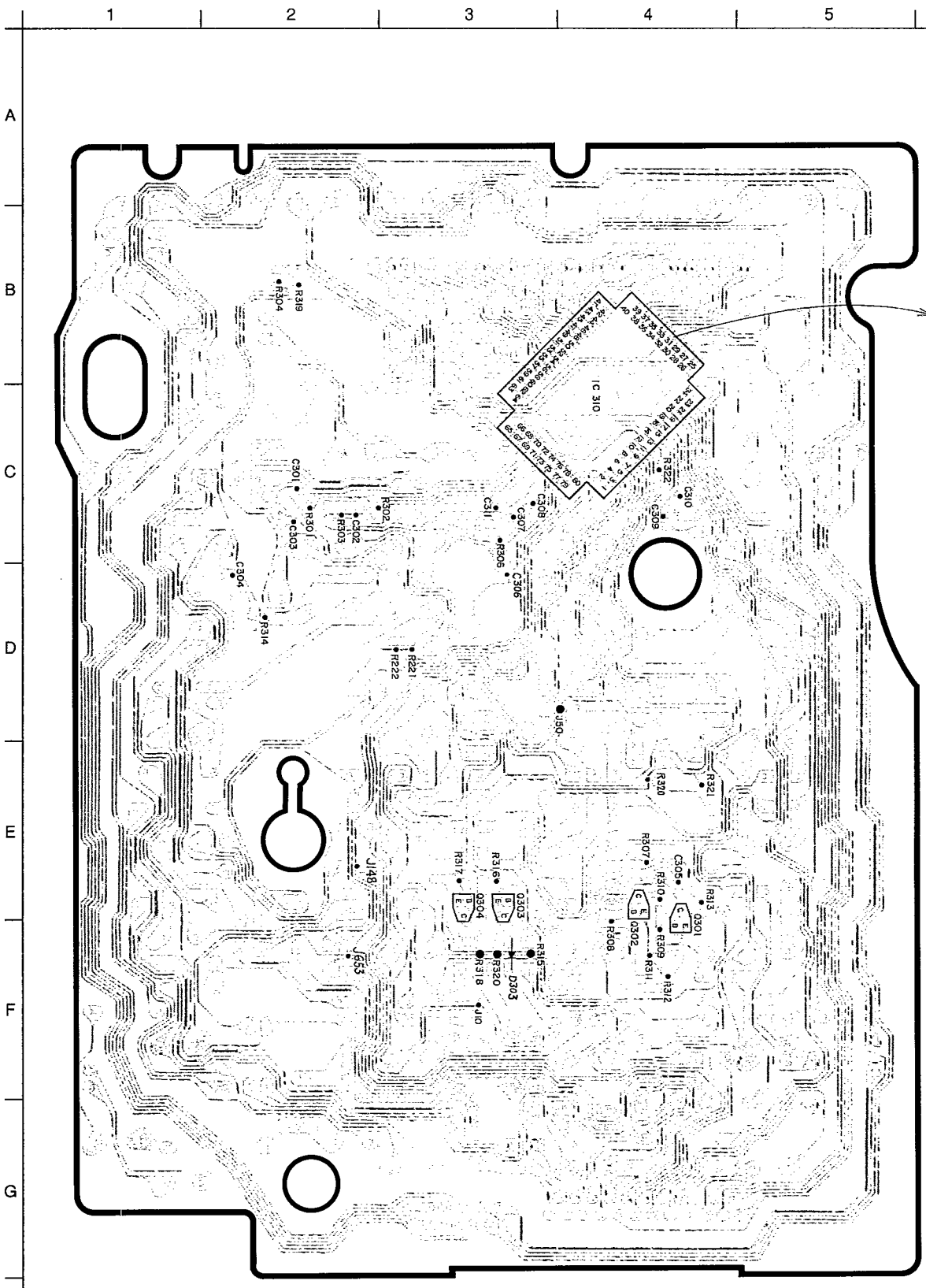
IC7	
Pin No.	Volatge
1~4	0
5~9	5.5
10, 11	0
12~16	5.5
17	0
18	3.4
19, 20	0
21	1.5
22	0
23	2.7
24	2.8
25	5.5
26	0
27, 28	5.5
29~32	0
33, 34	5.5
35~41	0
42, 43	5.9
44, 45	0
46	5.5
47	5.4
48	0
49	4
50, 51	5.5
52	0
53	5.5
55	5.5
56	2.5
57	2.7
58	2.5
59	2.7
60	0
61	2.2
62	0
63, 64	2.2



OPERATION PRINTED CIRCUIT BOARD (COMPONENT VIEW)

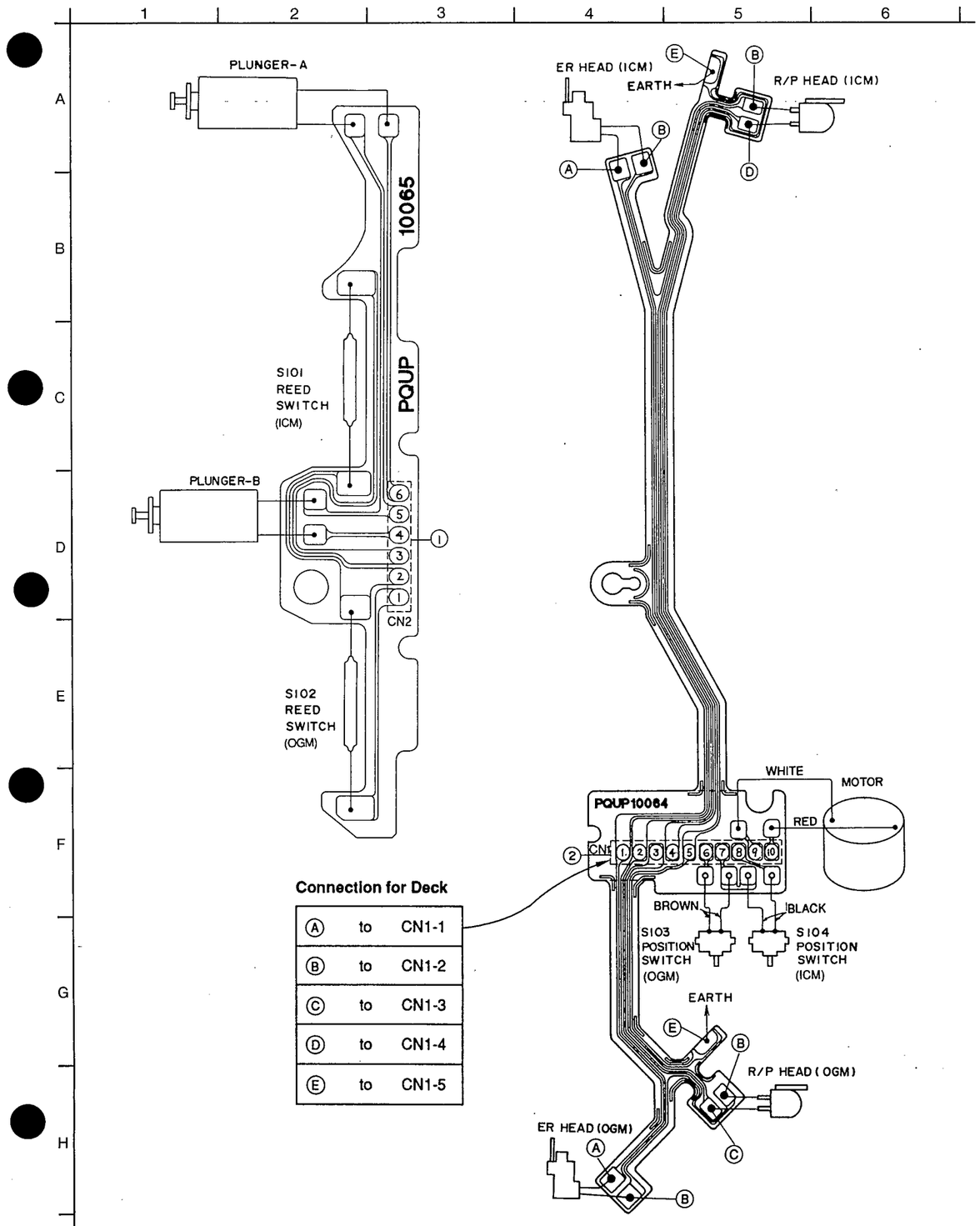


OPERATION PRINTED CIRCUIT BOARD (BOTTOM VIEW)



IC301	
Pin No.	Volatge
1	3.6
2	0
3~8	4.3
9	3.9
10	4.5
11	4.5
12	0
13	4.5
14	3
15	1.6
16	0
17	5
18~20	0
21~25	4.5
26~28	0
29	4.5
30	0
31	0
32	46
33~68	1.6
69	3.2
70	2.1
71	0
72	0
73	0
74	4.6
75	4.6
76	2.6
77	2.8
78	0
79	3.2
80	4.6

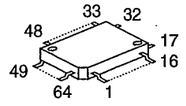
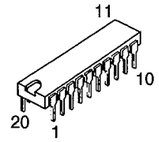
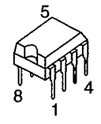
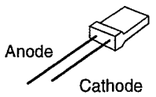
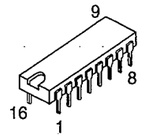
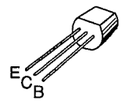
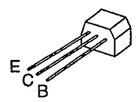
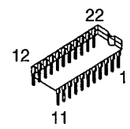
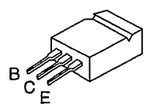
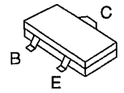
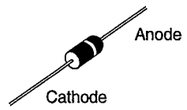
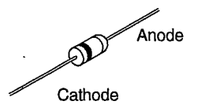
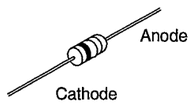
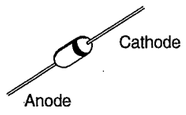
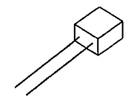
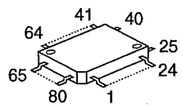
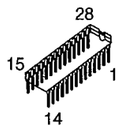
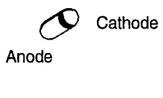
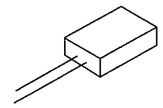
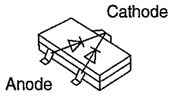
CASSETTE DECK CONNECTION



Connection for Deck

Ⓐ	to	CN1-1
Ⓑ	to	CN1-2
Ⓒ	to	CN1-3
Ⓓ	to	CN1-4
Ⓔ	to	CN1-5

TERMINAL GUIDE OF ICS, TRANSISTORS AND DIODES

 PQVI4678A32H	 PQVISC111812	 PQVIUPC358C PQVIBA8206	 LN268RPXTAB	 PQVICS11160N
 PQVT2N6517CA 2SA1625 PQVTKSD261CY	 2SC1740S	 AN6658K	 2SD2136	 PQVTFB1J3P PQVTDTD123K UN5213 2SB1218A 2SD1819A
 PQVDMTZ5R1 PQVDS5688G	 MA4110 MA4360 MA4180	 MA4033 MA4039 MA4047 MA8030	 1S2076 PQVDMTZ6R8 MA700A 1SS119	 LN260RPX
 PQVI4618B02F	 PQVISC77655S	 RLS71 PQVDRB751H4	 PQVDSLZ255B1	 MA141WK

BLOCK DIAGRAM

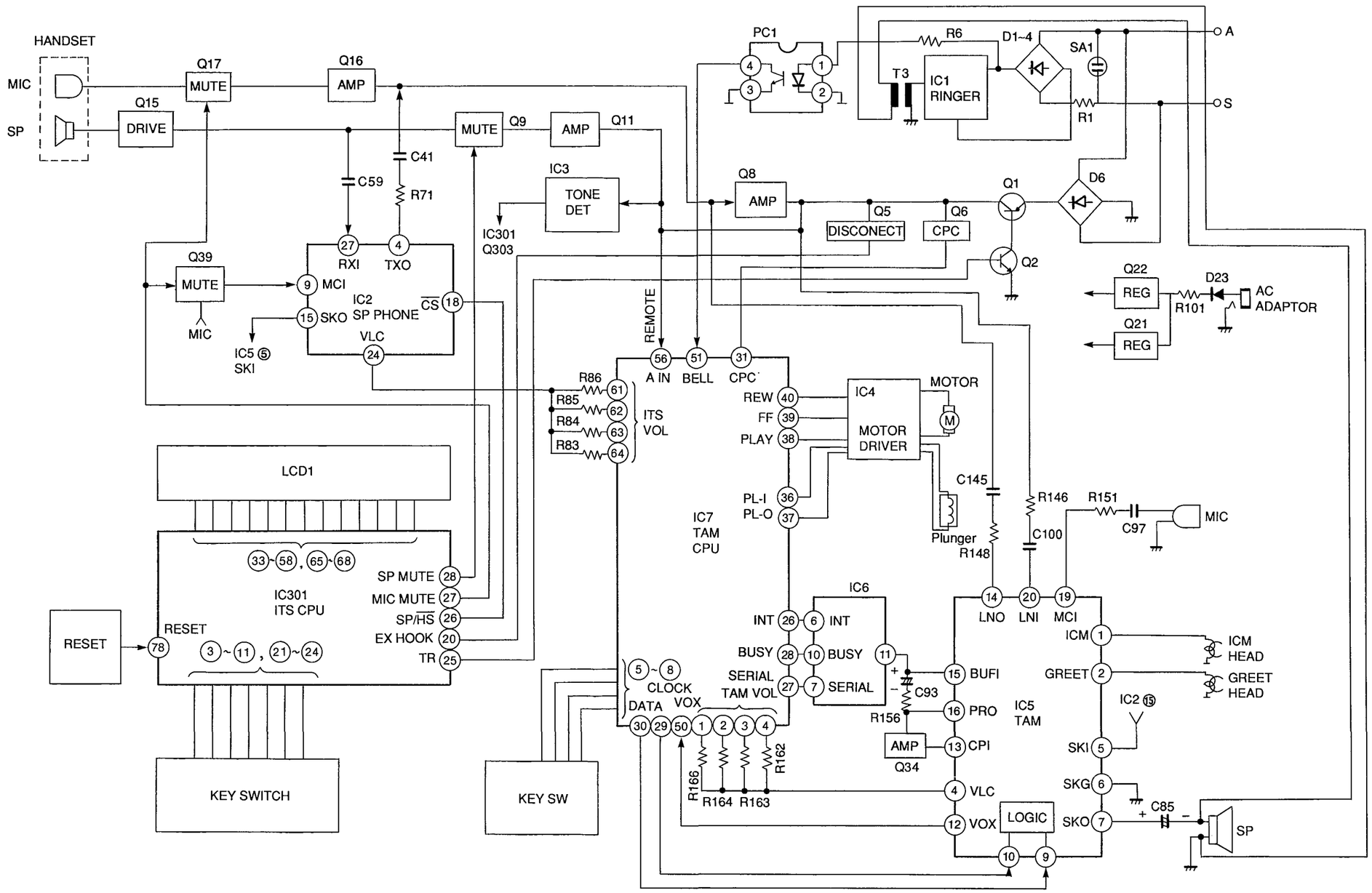


Fig. 12

CIRCUIT OPERATIONS

Note:
The circuit diagram may be modified at any time with the development of new technology.

■ TELEPHONE LINE INTERFACE

When the hook switch SW1 is ON (off-hook), the circuit is closed, and current is supplied to the base of Q2 via the diode bridge D6 and R9.
Q1 and Q2 are the dial pulse generating circuits, and are driven by the CPU (IC301), when the pin 34 of CPU is a Low level → Q12 → Q2 is OFF and Q1 is OFF. (break)
If port pin 2 is OFF (high impedance) → Q4 → Q2 and Q1 ON. (make)

R2 ..... Bell sensitivity adjustment
R4, C4 .....Bell frequency setting fH1, fH2
R3, C3 ..... Repeat frequency setting fL

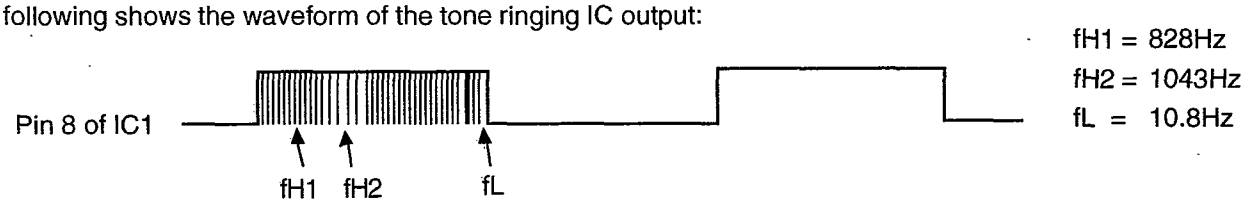
fH, fH2, fL are derived from the following formulas:

$$fH1 = \frac{1}{1.227 \times R6 \times C4} = 828HZ \qquad fL = \frac{1}{1.273 \times R5 \times C3} = 10.8HZ$$

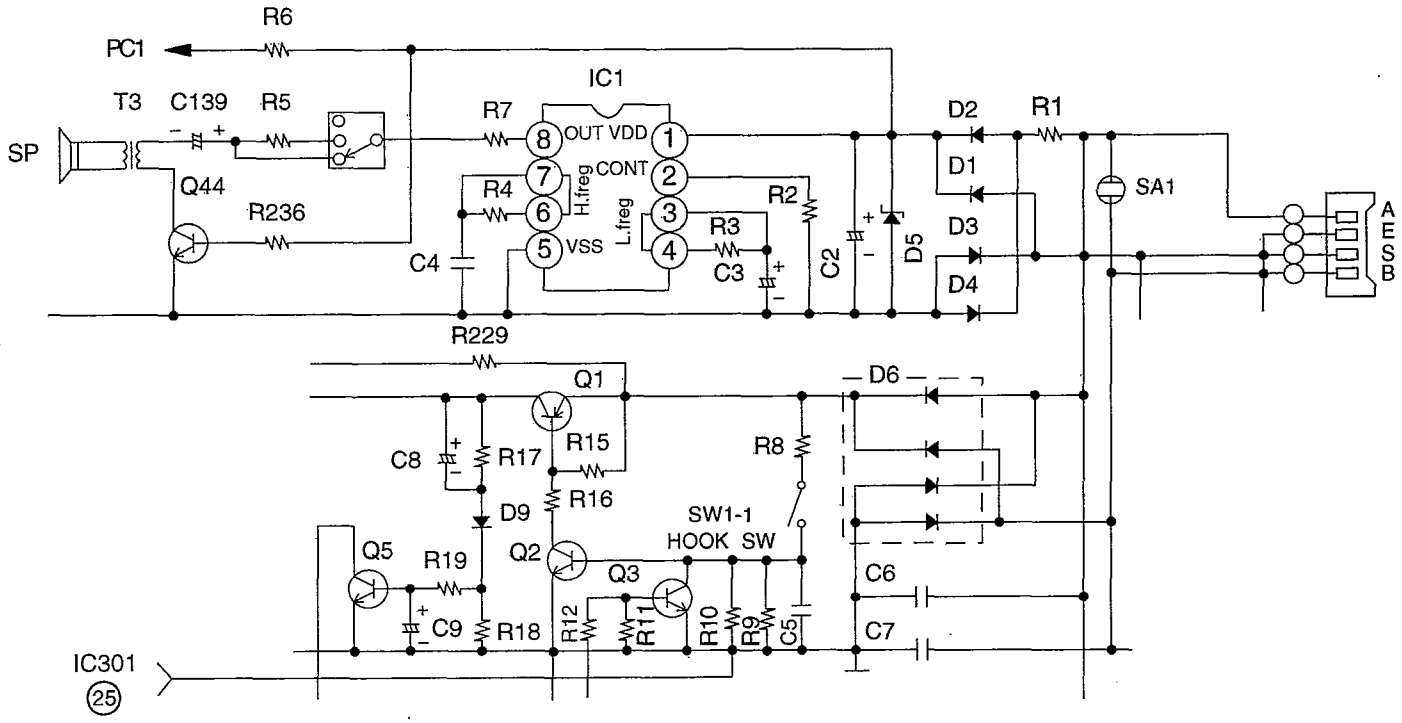
R5=120kΩ C4=0.0082μF R3=330kΩ C3=0.22μF

fH2=1.26×fH1=1043Hz

The following shows the waveform of the tone ringing IC output:



Circuit Diagram



■ TONE DIAL CIRCUIT

Function:
The tone dialing circuit consists of a DTMF (Dual Tone Multi Frequency) signals generator (outputted from Pins 72 and 73 of the microprocessor) for tone dialing, and also a circuit for outputting the signal to the line.
The DTMF circuit identifies inputs from the 12 keys (1,2,3,4,5,6,7,8,9, * and #) by means of a total of seven frequencies, that is four low frequencies (Low group) and three high frequencies (High group).

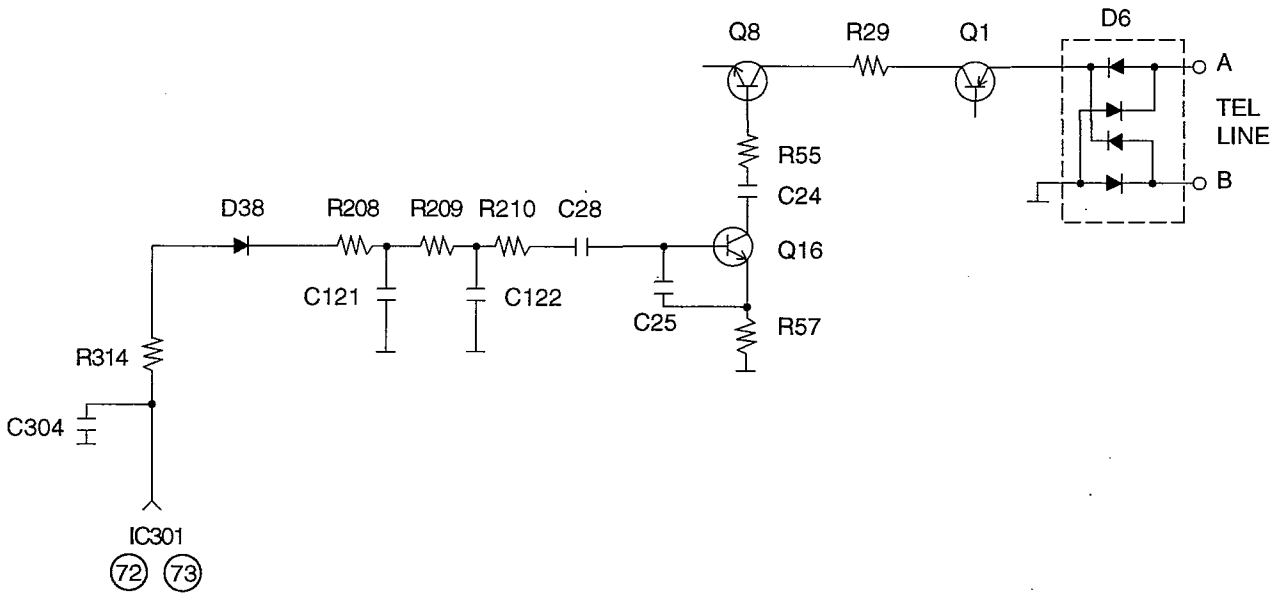
Circuit Description:
When a dial key is pressed, a DTMF signal is outputted from pins 72 and 73 of IC301 as an analog synthetic wave.
The signal flow to the line is as follows: Pins 72 and 73 of IC301 → R314 → D38 → R208 → R209 → R210 → C28 → Base of Q16 → Collector of Q16 → C24 → R55 → Base of Q8 → Collector of Q8 → R29 → Collector of Q1 → Emitter of Q1 → D6 → Telephone Line.
The DTMF signal is sent to the line via the following path.
Q8 is an amplifier which is used to output the signal to line.
Shown below is the signal flow used to output the DTMF signal from the handset as a monitor tone when a dial key is pressed.
Pins 72 and 73 of IC301 → R314 → R42 → C20 → Base of Q16 → Emitter of Q15 → C22 → Handset Speaker.
The signal combination and frequency corresponding to each dial key is shown below.

Tone Frequencie

High Group / Low Group	H1	H2	H3
L1	1	2	3
L2	4	5	6
L3	7	8	9
L4	*	0	#

Low Group	Frequencies	High Group	Frequencies
L1	697Hz± 1.5%	H1	1209Hz± 1.5%
L2	770Hz± 1.5%	H2	1336Hz± 1.5%
L3	852Hz± 1.5%	H3	1477Hz± 1.5%
L4	941Hz± 1.5%		

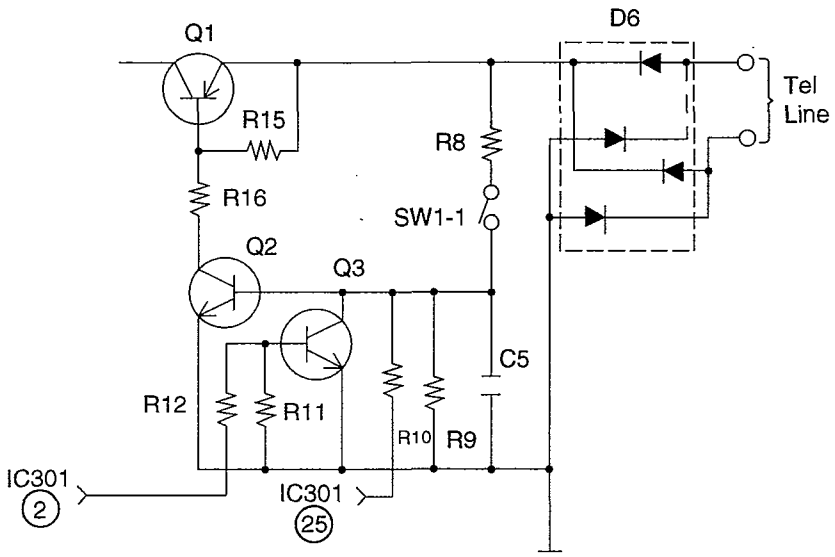
CIrcuit Diagram



■ PULSE DIAL CIRCUIT

Circuit Operation:
When the hook switch SW1 is ON (off-hook), the circuit is closed, and current is supplied to the base of Q2 via the diode bridge D6 and Q2 are ON → Q1 is ON (OFF-HOOK condition).
Q1 and Q2 are the dial pulse generating circuits, and are driven by the CPU, when the Pin 2 of IC301(CPU) is High → Q3 is ON → Q2 is OFF and Q1 is OFF. (Break)
If port Pin 2 of IC301 is OPEN → R12 → Q3 is OFF → Q2 is ON → Q1 is ON. (Make)

Circuit Diagram



■ SPEAKERPHONE CIRCUIT

Function:
This circuit controls the automatic switching of the transmitted and received signals, to and from the telephone line, when the unit is used in the hands-free mode.

Circuit Operation:
The speakerphone can only provide a one-way communication path.
In other words, it can either transmit an outgoing signal or receive an incoming signal at a given time, but cannot do both simultaneously. Therefore, a switching circuit is necessary to control the flow of the outgoing and incoming signals.
This switching circuit is contained in IC2 and consists of a Voice Detector. Tx Attenuator, Rx Attenuators, Comparator and Attenuator Control. The circuit analyzes whether the Tx (transmit) or the Rx (receive) signal is louder, and then it processes the signals such that the louder signal is given precedence.
The Voice Detector provides a DC input to the Attenuator Control corresponding to the Tx signal.
The Comparator receives a Tx and a Rx signal, and supplies a DC input to the Attenuator Control corresponding to the Rx signal. The Attenuator Control provides a control signal to the Tx and the Rx Attenuator to switch the appropriate signals on and off. The Attenuator Control also detects the level of the volume control to automatically adjust for changing ambient conditions.

1) Transmission Signal Path
The input signal from the microphone is sent through the circuit via the following path:
• Mic → Pin 9 of IC2 → Pin 10 of IC2 → Pin 3 of IC2 → Pin 4 of IC2 → Q36 → Q35 → Interface (T1) → Telephone Line.

2) Reception signal Path
Signals received from the telephone line are outputted at the speaker via the following path:
• Telephone Line → Interface (T1) → receive amp (Q37) → Pin 27 of IC2 → Pin 26 of IC2 → Pin 19 of IC2 → Pin 15 of IC2 → Speaker.

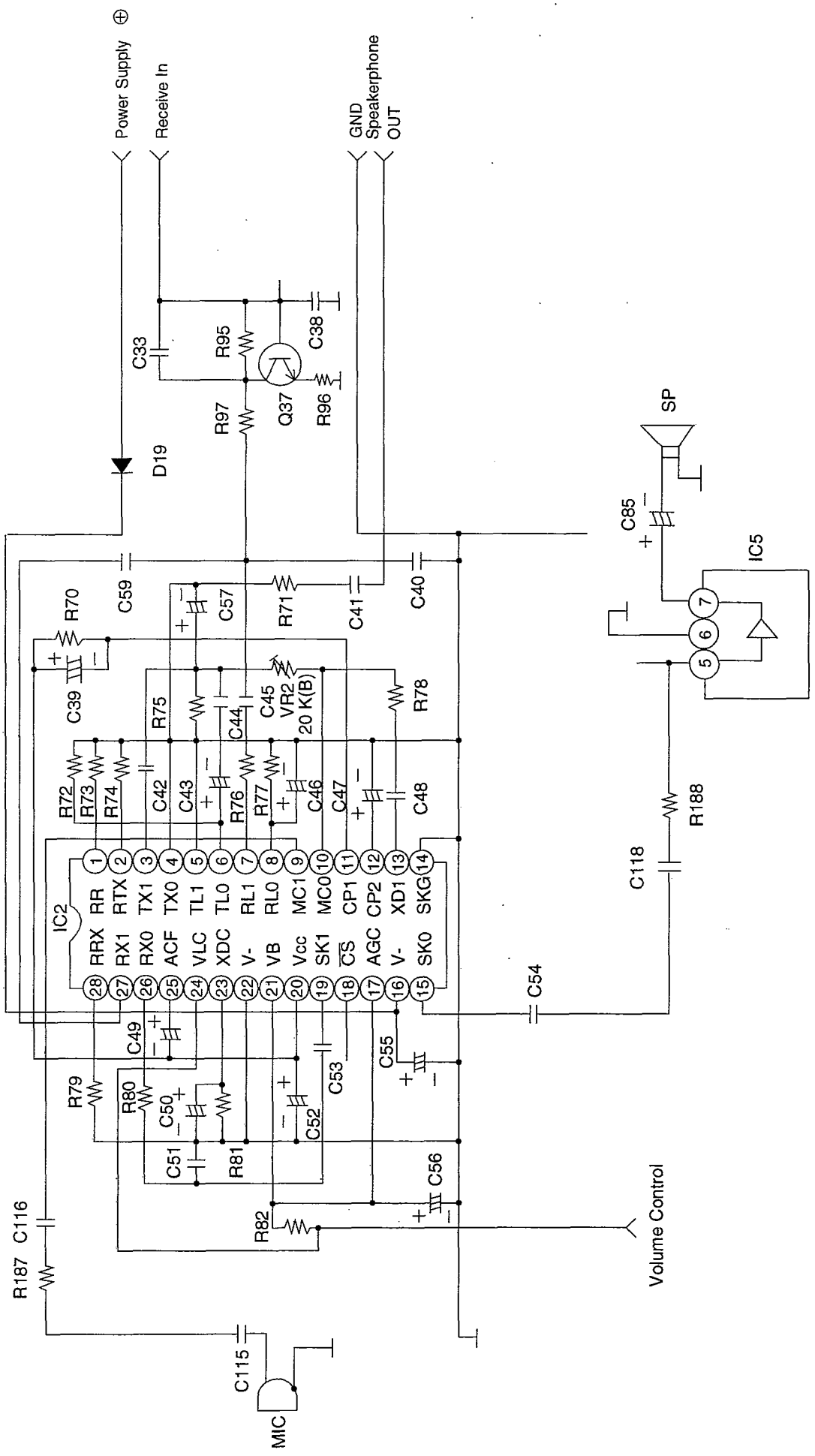
3) Control Signal Path:
Control signals for transmission and reception are inputted to IC2 via the following path:
(Transmission Control Signal Path)
•Mic → Pin 9 of IC2 → Pin 10 of IC2 → Pin 3 of IC2 → Pin 4 of IC2 → Pin 5 of IC2
(Reception Control Signal Path)
• Telephone Line → Interface (T1) → receive amp (Q37) → Pin 7 of IC2

4) Transmission/reception Switching
The comparison result between Tx and Rx outputs as a DC level of Pin 25 of IC2
Tx level is high ..... Pin 25 = Pin 20 --- 6mV
Rx level is high ..... Pin 25 = Pin 20 --- 150mV
Comparator output is connected to the attenuator control inside of IC2

5) Voice Detector
The output of the mic amp (Pin 10 of IC2) is supplied to Pin 13 of IC2 as a control signal for the voice detector.

6) Attenuator Control
The attenuator control detects the setting of the volume control through Pin 24 of IC2 to automatically adjust for changing ambient conditions.

Circuit Diagram



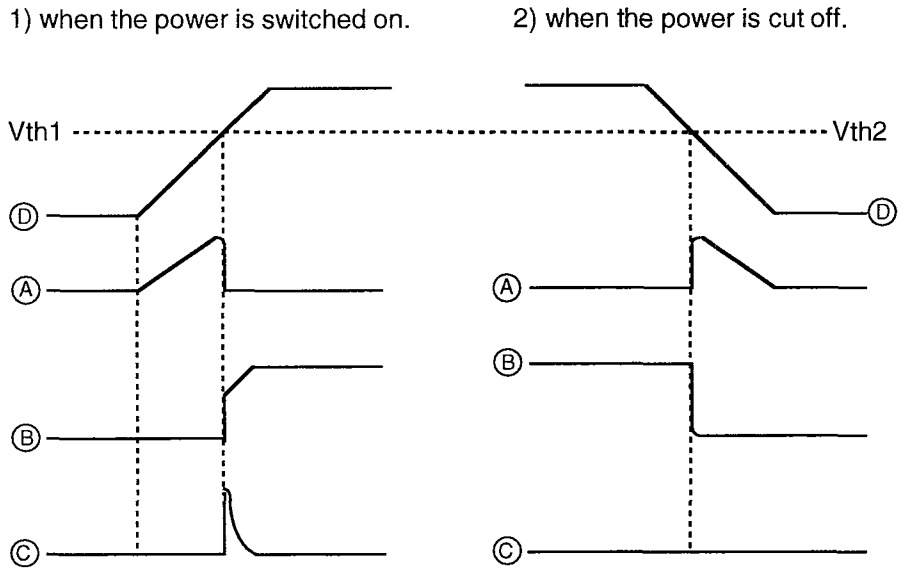
■ITS RESET AND STAND BY CONTROL CIRCUIT

Function:
In order to hold contents of the memory of IC301, the unit is designed so that it goes into the Stop mode when the power is cut off (memory backup mode: CPU clock stops in order to reduce power consumption).

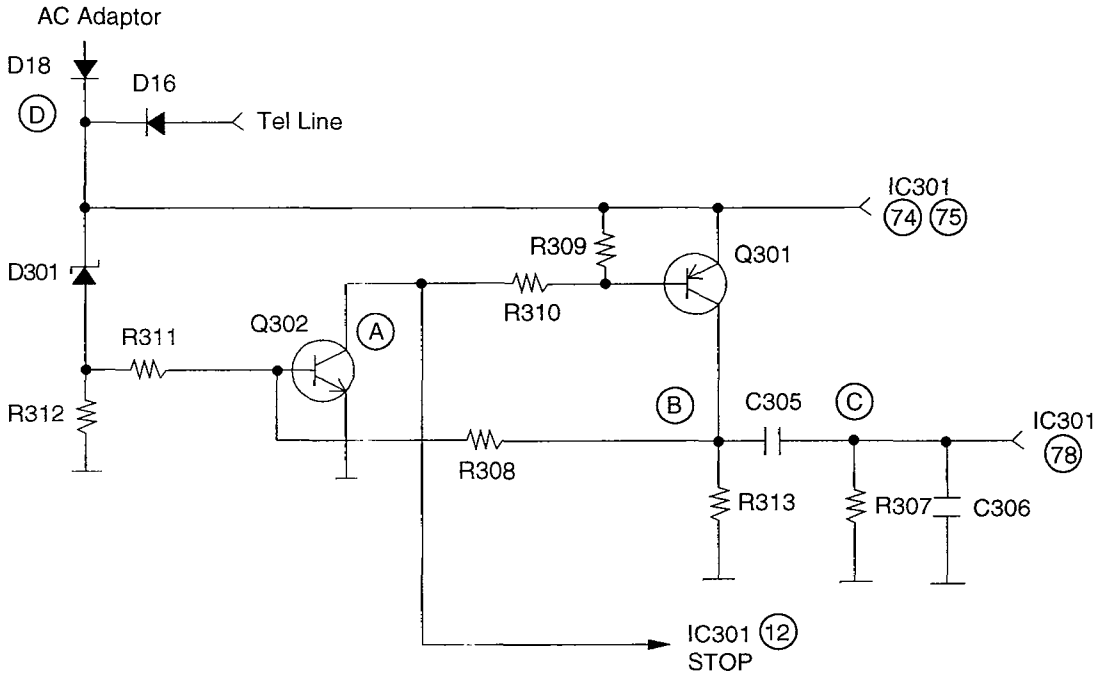
Circuit Operation:
Timing charts Ⓐ to Ⓓ are shown.

1) When the power is switched ON, the voltage will gradually rise until it reaches Vth1, whereupon Pin 78 of IC301 input port charges from a "High" → "Low", and a reset is applied. Simultaneously, a "Low" is inputted to Pin 12 of IC301 the stop
input port, causing the stop mode to be cleared.

2) When the power is cut off, the voltage falls until reaches Vth2, whereupon a "High" is inputted to Pin 12 of IC301, and IC301 enters the stop mode to reduce power consumption, so that only memory hold current is supplied.



Circuit Diagram

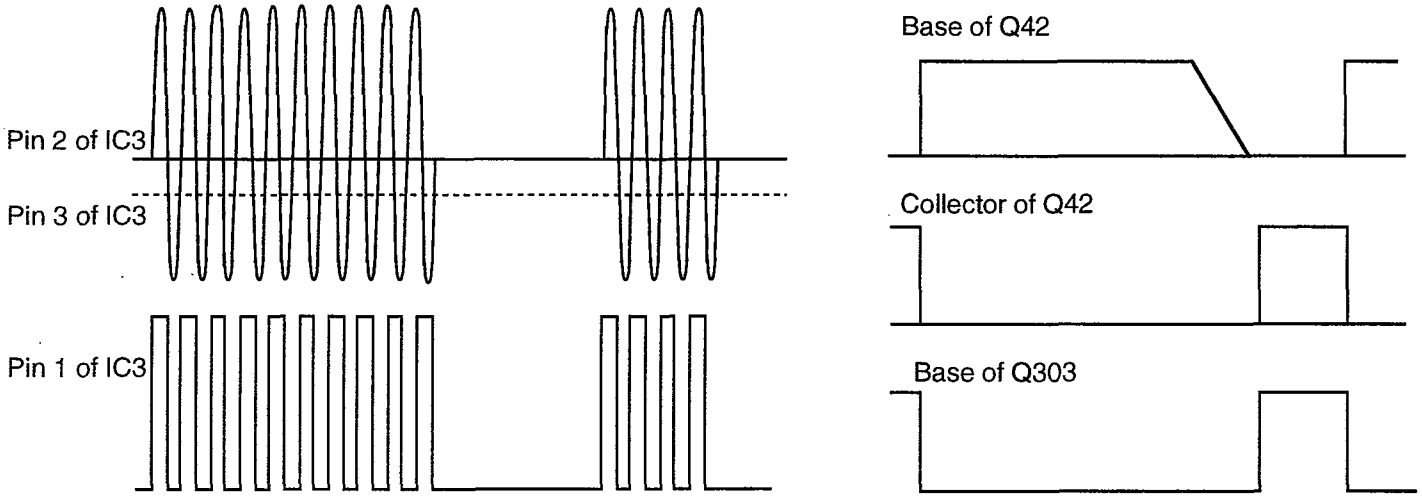


■TONE DETECTION CIRCUIT

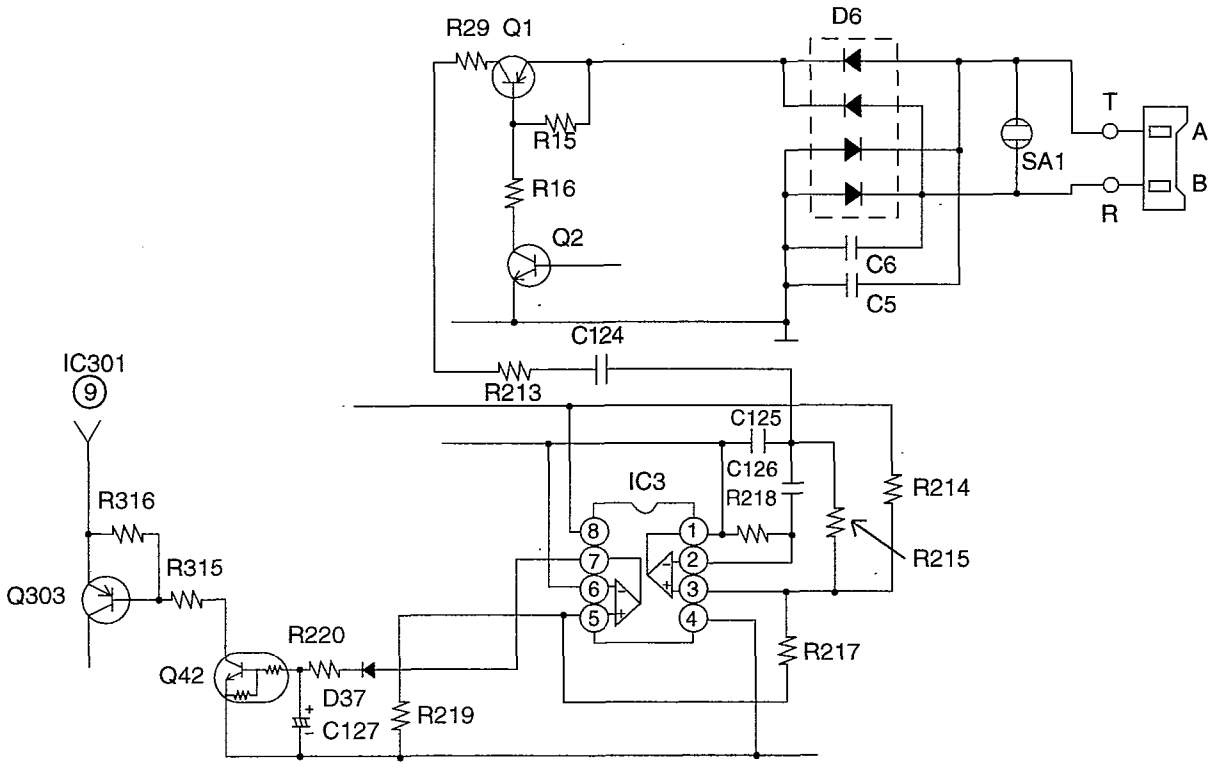
Function:
This circuit is used to sense the status of the line (busy tone or dial tone) during Auto PAUSE or Auto Redial.

Circuit Description:
The signal from the line passes through the path D6 → Q1 → R29 → R213 → C124 → C125, and and then the signal is inputted to Pin 6 of IC3. Here the dial tone or busy tone alone is extracted and outputted from Pin 7 of IC3. It is then input to pin 2 of IC3 and compared with the level at Pin 3 of IC3. When a busy tone or dial tone is inputted, Pin 1 of IC3 becomes HIGH logic level.
This level passes through D37, and is smoothed by C127 → Q42 goes ON → collector of Q42 becomes LOW logic level → base of Q303 becomes LOW logic level.
When there is not busy tone or dial tone , Pin 1 of IC3 becomes LOW logic level → D37 → Q42 goes OFF → collector of Q42 becomes HIGH logic level → base of Q303 becomes HIGH logic level.

Timing Chart



Circuit Diagram

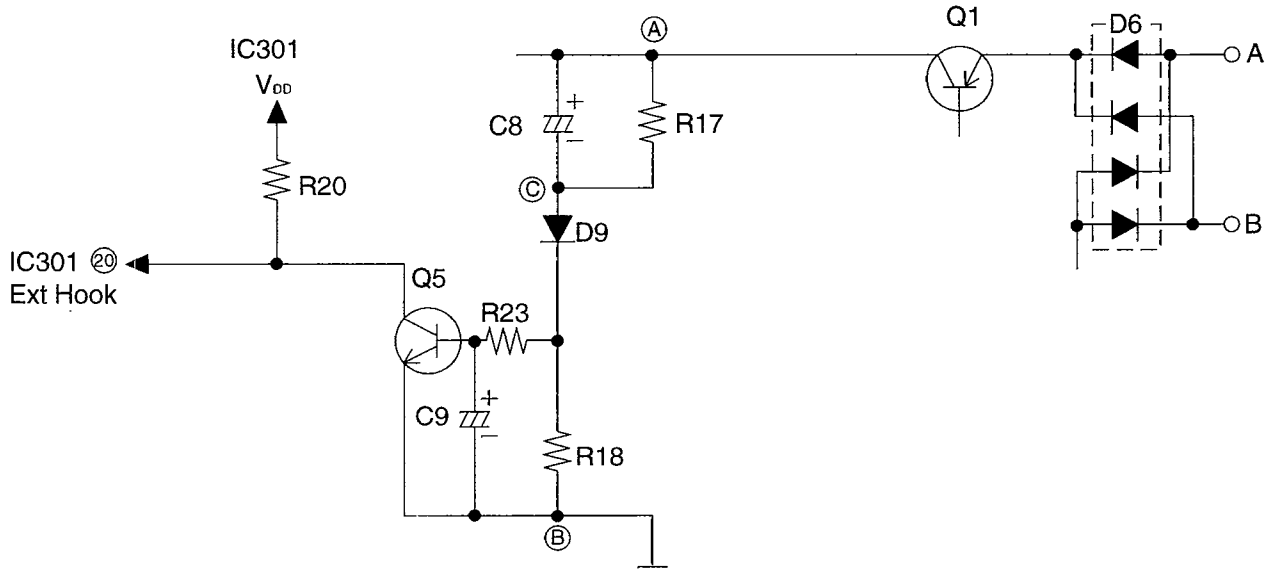


■ CLEARING THE HOLD STATUS AND AUTO DISCONNECT CIRCUIT

Function:
When line recording is talking place in the Hold status or a TAM ANSWER status, this unit will detect the OFF-Hook status of another telephone connected in parallel with the line and then clear the Hold status, and stops, recording.

Circuit Description:
When the unit seizes a line a voltage will be applied between points Ⓐ and Ⓑ. At this time a voltage will be applied to the base of Q5, causing Q5 to turn ON. As a result, the collector of Q5 will go Low, and a Low status will be inputted to Pin 20 of IC301, thus detecting the fact that the unit has seized the line. Then, when the parallel-connected telephone goes into an OFF-Hook status, the voltage between Ⓐ and Ⓑ will fall. However, the charge on C10 causes the previous voltage between
Ⓐ and Ⓒ to be retained, hence the voltage between Ⓒ and Ⓑ falls. Consequently, the base potential of Q5 falls, causing Q5 to turn OFF and Pin 20 of IC301 to go high, thus detecting the fact that the parallel-connected telephone is in an OFF-Hook status.

Circuit Diagram



■LCD CIRCUIT

1) LCD waveform and drive voltage:

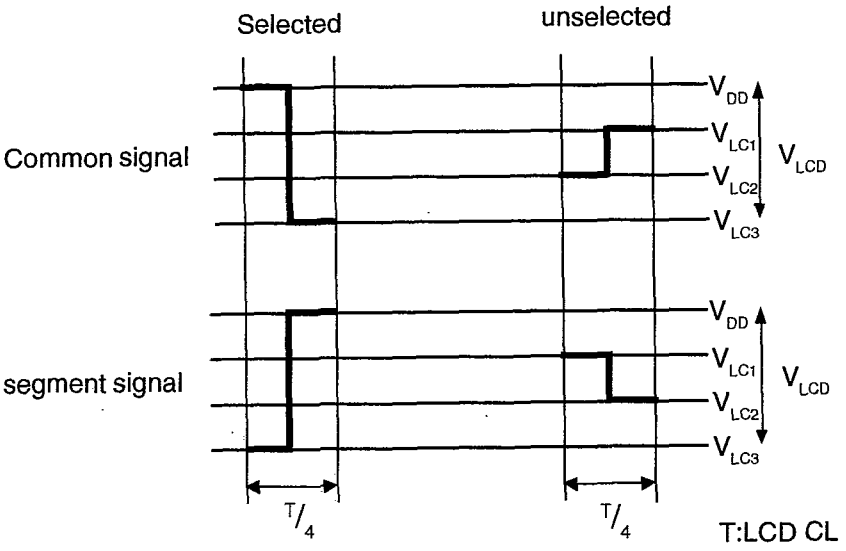
The IC301 segment terminal is connected to the front electrode, while the common terminal is connected to the rear electrode, thus driving the LCD panel. When both the segment and the common signals are at the selected voltage, the differential waveform of the two signals becomes the square wave required for the LCD panel. Since the signal is a square wave, the LCD will go out if either one, or both signals become a non-selected voltage. In order to supply the optimum LCD drive voltage for the segment signal and the common signal based on the $^1/_3$ bias law,

$V_{LC1}=V_{DD}-^1/_3\ V_{LCD}$
$V_{LC2}=V_{DD}-^2/_3\ V_{LCD}$
$V_{LC3}=V_{DD}-V_{LCD}$

but $2.7 \leqq V_{LCD} \leqq V_{DD}$

Using these voltages and timing signals, the LCD drive voltage control circuit sets the selected voltage and non-selected voltage as well as their phases, in the following way: It can be seen that the voltage ratio of the select and non-select voltage is 3:1, and the phase is inverted. The common signal and segment signal phases are also constantly inverted.

(common signal and segment signal voltages and phases)



T:LCD CL of a cycle

Accordingly, the potential difference between the common signal and the segment signal which drive the LCD panel is as indicated in the following chart, and only when both are at selected voltage is the lighting voltage +VLCD/-VLCD produced. In any other combination, the "light out" voltage $^1/_3$ VLCD/- $^1/_3$ VLCD is produced.

segment signal Sn / common signal COMm		selected	unselected
		V_{LC3}/V_{DD}	V_{LC1}/V_{LC2}
selected	V_{DD}/V_{LC3}	$+V_{LCD}-V_{LCD}$	$+^1/_3 V_{LCD}/$ $-^1/_3 V_{LCD}$
unselected	V_{LC2}/V_{LC1}	$+^1/_3 V_{LCD}/$ $-^1/_3 V_{LCD}$	$+^1/_3 V_{LCD}/$ $-^1/_3 V_{LCD}$

In accordance with the display pattern shown in Fig. C, it is necessary for the selected and non-selected voltages shown in the following chart to be output at the Seg12, Seg13 terminals.

segment / commom	Seg 12	Seg 13
COM0	selected	selected
COM1	unselected	selected
COM2	selected	selected
COM3	selected	selected

The LCD drive waveform produced between Seg12 and the COM0, COM1 signals is shown in Fig. D. It can thus be seen that when Seg12 becomes the selected voltage as the result of the COM0 select timing. The square waveform +VLCD/ -VLCD, which is the LCD lighting level, is generated.

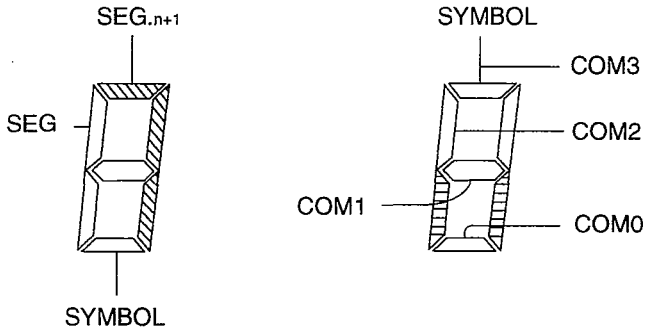


Fig.C

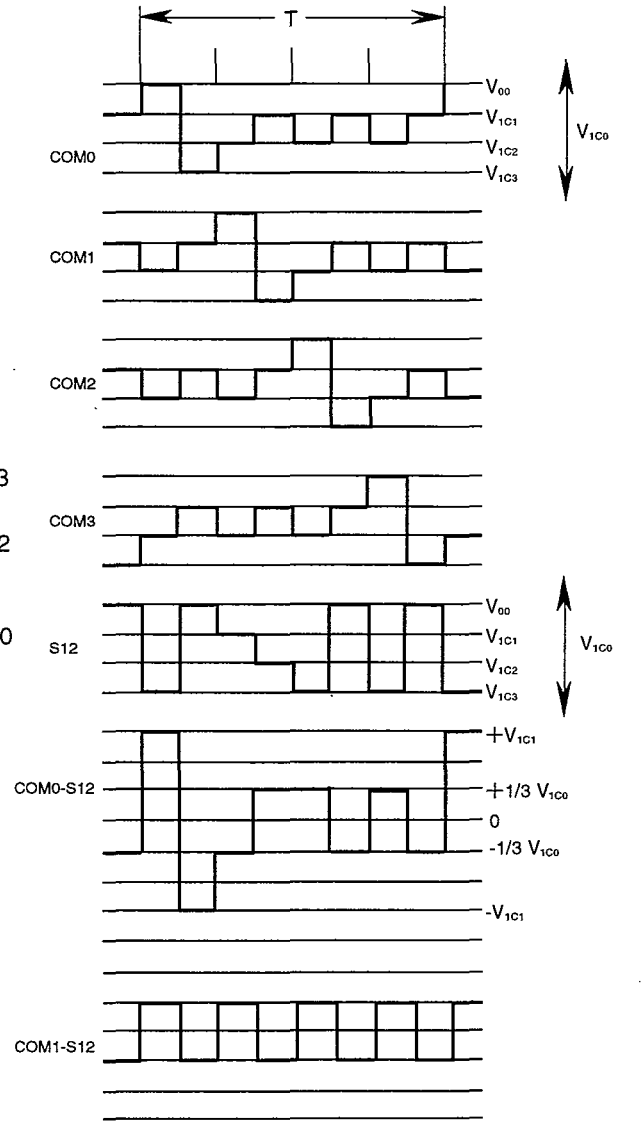
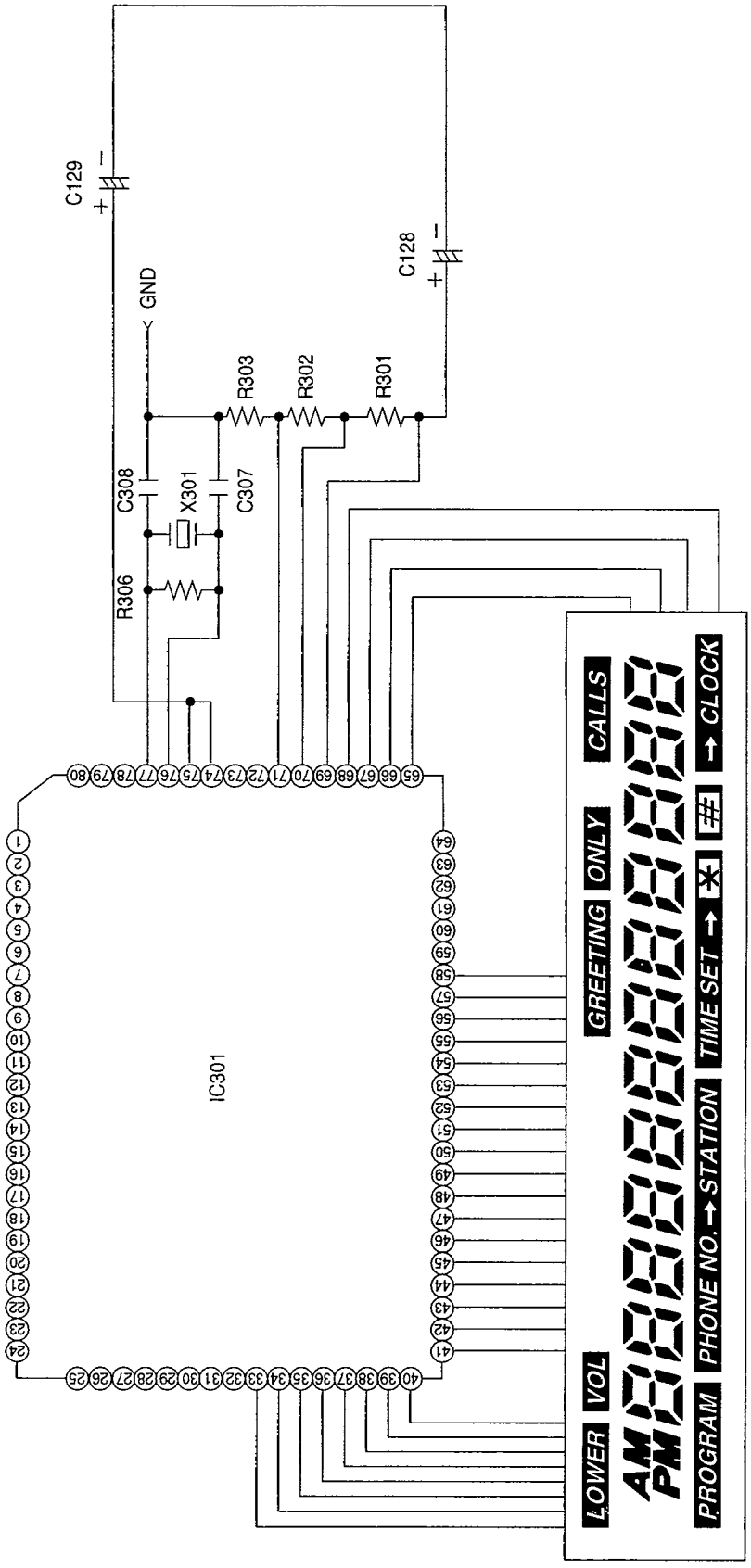


Fig. D

2) Contrast

The contrast of the VLCD is adjusted as the ground of the LCD drive voltage circuit is switched by R221, R222 and outputted of pin 69~71 of IC301.

Circuit Diagram

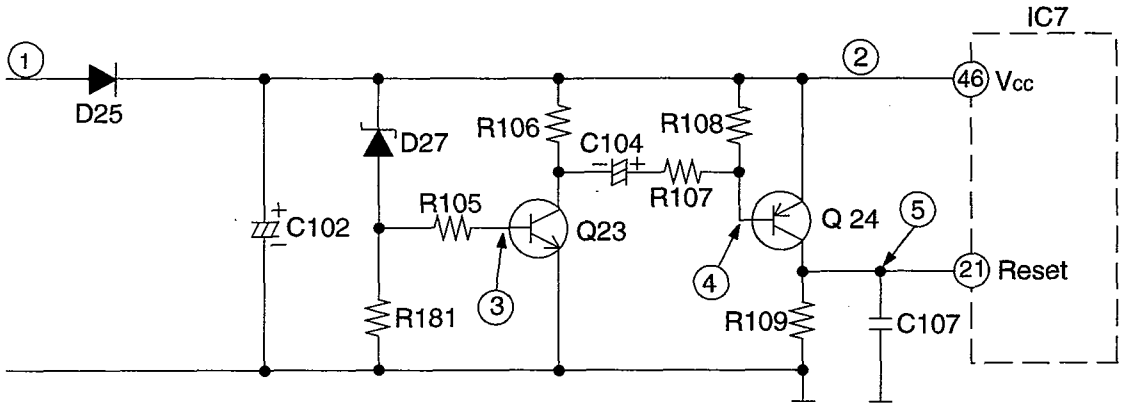


■INITIALIZING CIRCUIT

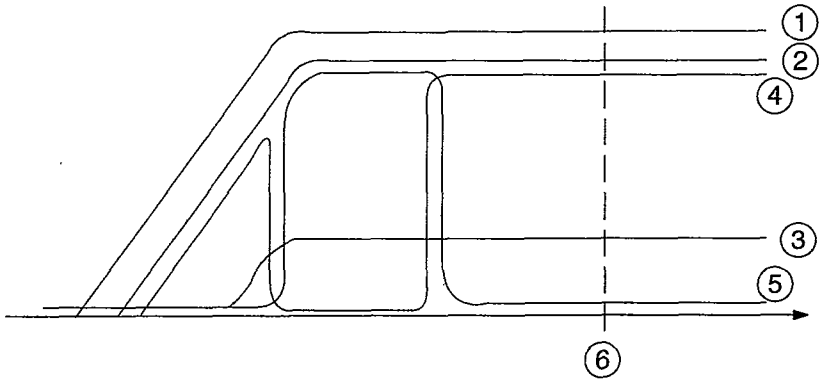
Function:
This circuit is used for to initialize the microcomputer when it incorporates an AC adaptor.

Circuit Operation:
When the AC Adaptor is inserted into the unit, then the voltage is shifted by D25 and power is supplied to the CPU. The set can operate beyond point Ⓐ in the circuit voltage diagram.

Circuit Diagram



Circuit Voltage



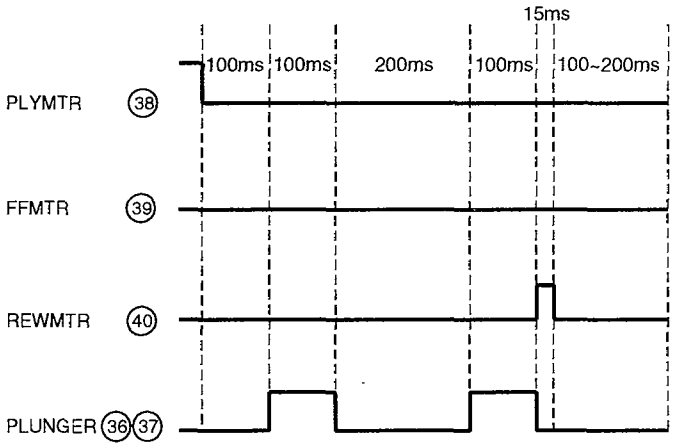
■ TAPE TRANSPORT CONTROL

Circuit Operation:
The timing for the plunger and motor switch are used to operate the deck is as shown in the timing chart.

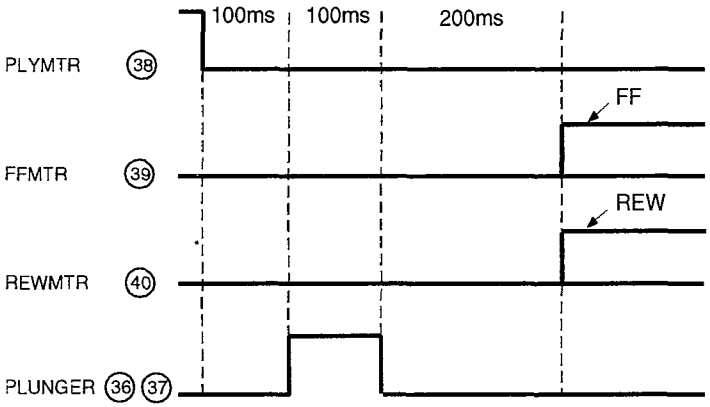
Greeting Message

Timing Chart

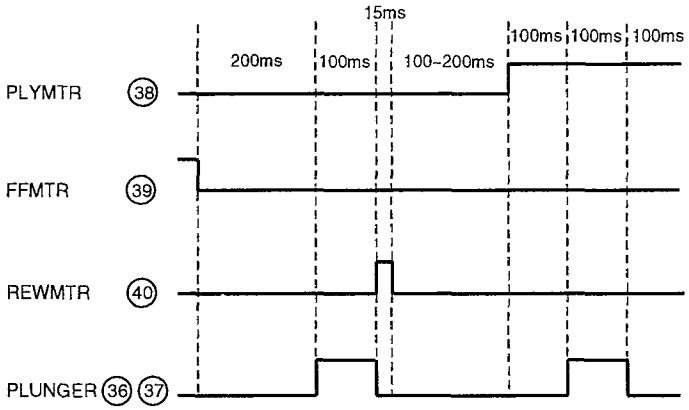
PLAY/REC→STOP



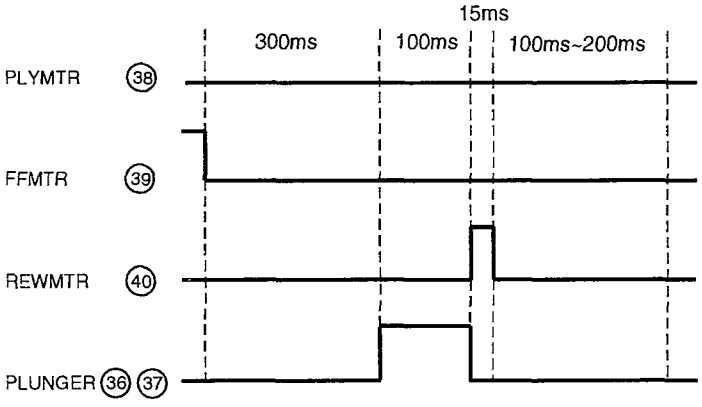
PLAY/REC→FF/REW



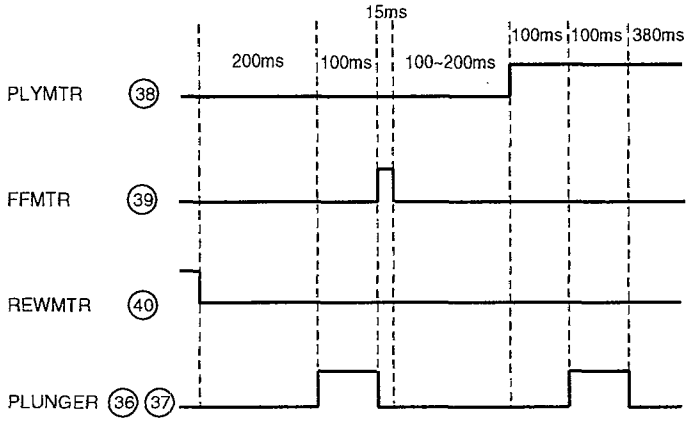
FF→PLAY/REC



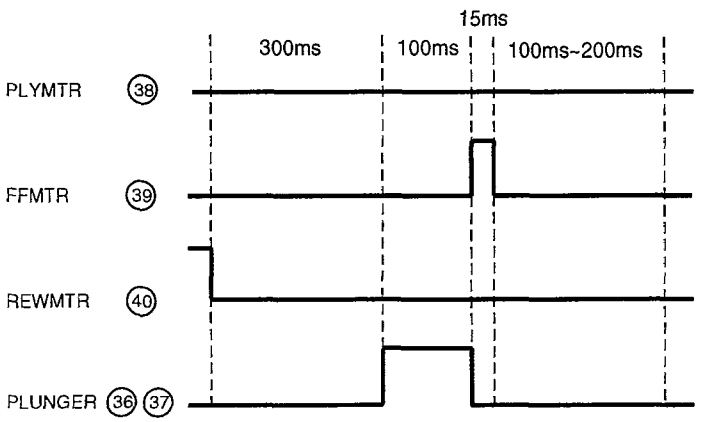
FF→STOP



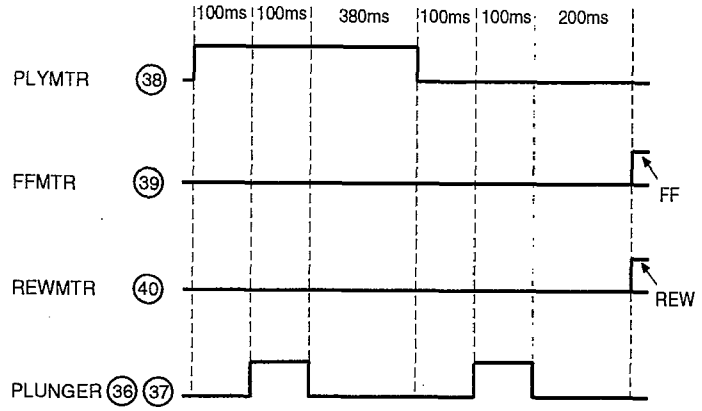
REW→PLAY/REC



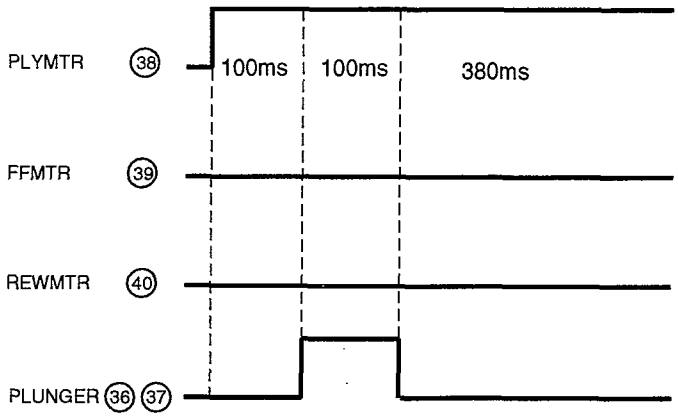
REW→STOP



STOP→FF/REW

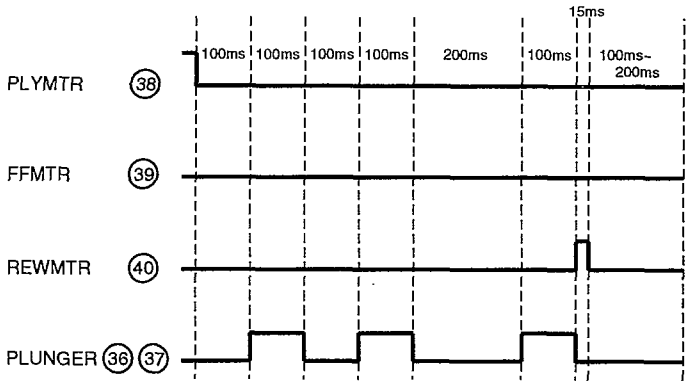


STOP→PLAY/REC

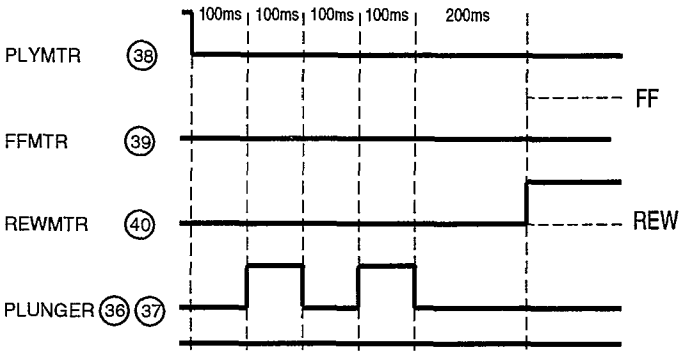


Incoming Message

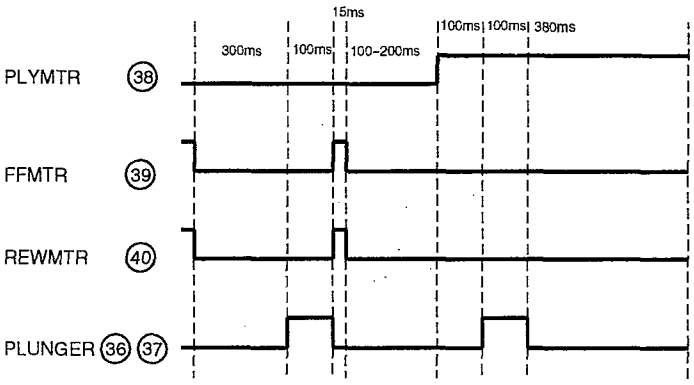
PLAY/REC→STOP



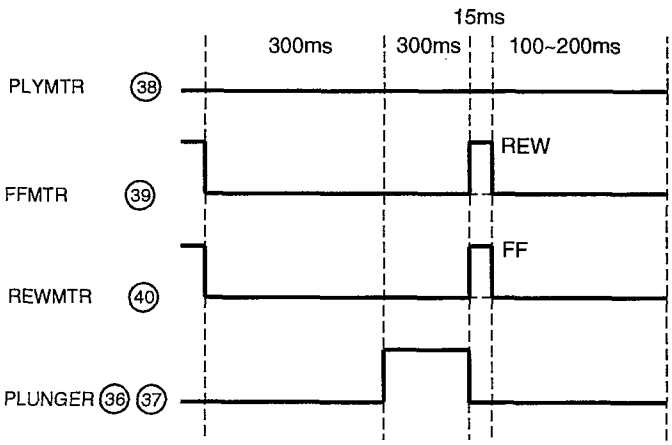
PLAY/REC→FF/REW



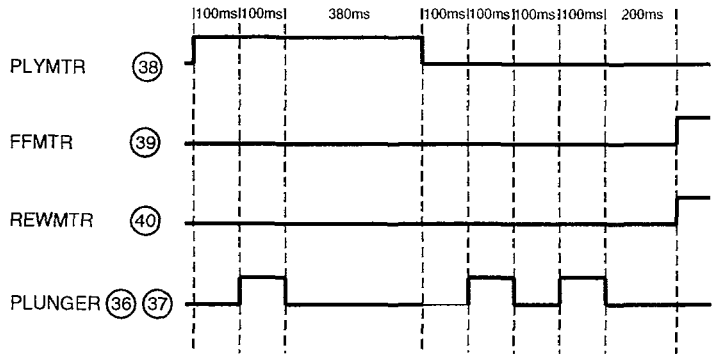
FF/REW→PLAY/REC



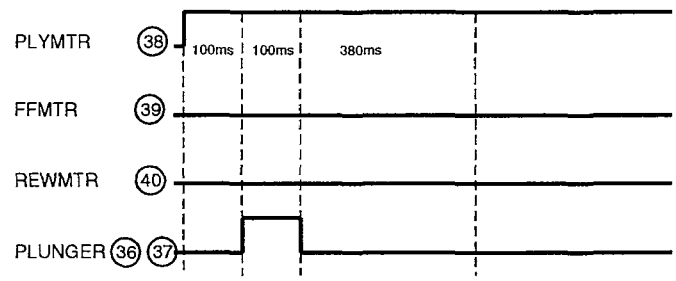
FF/REW→STOP



STOP→FF/REW



STOP→PLAY/REC



■REMOTE SIGNAL DETECTOR CIRCUIT

Circuit Operation:

A remote control signal is used with the dual-tone multiple-frequency (DTMF) signal.
The remote signal output from the telephone line via T1. And it is inputted to Pin 56 of IC7 passed through C147 and R93.
The DTMF signal is inputted to Pin 56 of IC7.

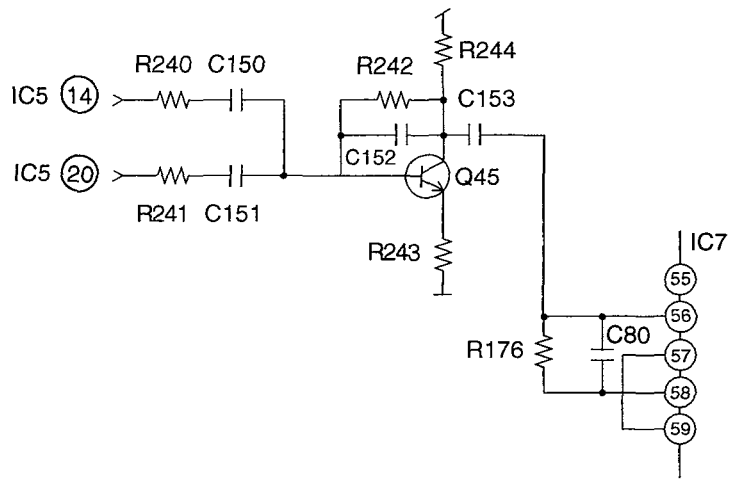
Circuit Diagram

Ⓐ DTMF+$\overline{\text{OGM}}$

Ⓑ OGM

Ⓐ + Ⓑ = DTMF+OGM+OGM

Ⓒ = DTMF



■PLAYBACK CIRCUIT (OGM, ICM MESSAGE)

Circuit Operation:
The playback signal for OGM and ICM MESSAGE is selected by IC5.

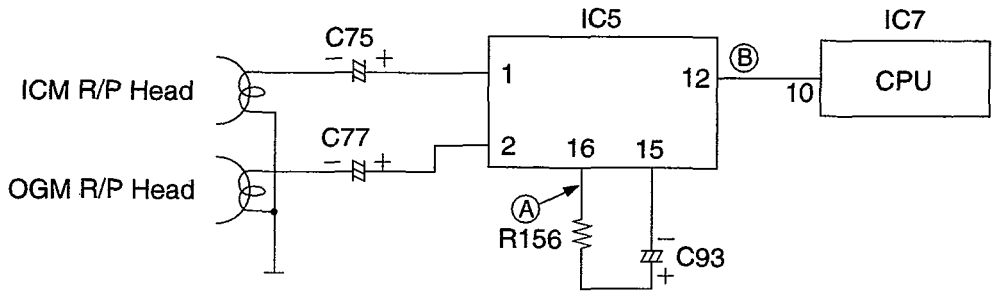
- ICM
  ICM R/P → C 75 → Pin 1 of IC5 → Pin 16 of IC5 → C93 → R156 → Pin 15 of IC5 → Pin 7 of IC5 → C85 → SPEAKER.
- OGM
  OGM R/P → C 77 → Pin 2 of IC5

Circuit Diagram ..... See Page 52

■OGM END DETECTOR CIRCUIT

Circuit Operation:
When the Stop Button is pressed upon completion of the OGM recording, no sound signals are recorded on the tape. A no-sound detection system is used during playback. If a no-sound condition exists for 5 seconds, CPU detects the OGM end by the output of Vox Circuit (Fig. E).

Circuit Diagram



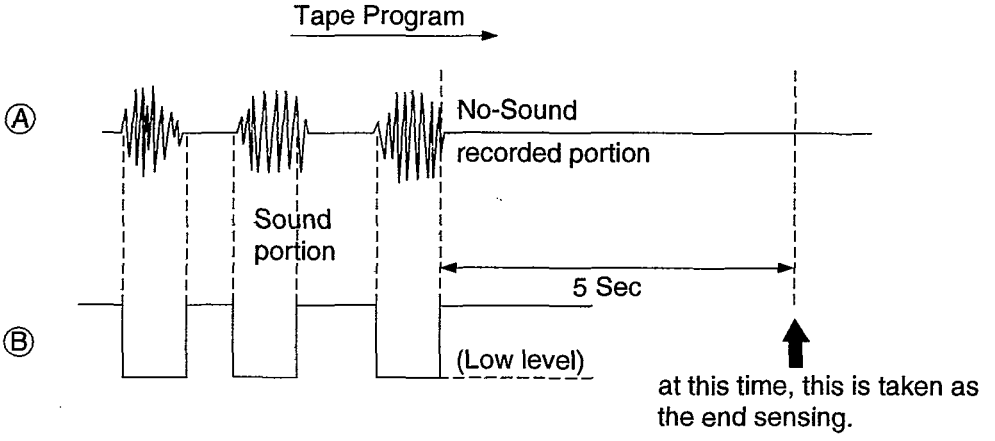


FIG.E

■ RECORD CIRCUIT

Circuit Operation:

(Recording signals)

Recording signal form the telephone line or MIC is selected by IC5.

The recording signal flows as follows:

Mic → C 97 → R151 → Pin 19 of IC5 → Pin 16 of IC5 → C93 → R156 → Pin 15 of IC5 → Pin 1 of IC5 → C75 → ICM Head

Tel line → R146 → C100 → Pin 20 of IC5

→Pin 2 of IC5 → C77 → OGM Head

(Signal)

The beep tone is generated by IC7.

The beep tone of the ICM recording (from pin 18 of IC7) is processed in the ICM recording head via C146 and R183.

(Erase)

When in the Rec mode, pin 17 of IC7 is Low.

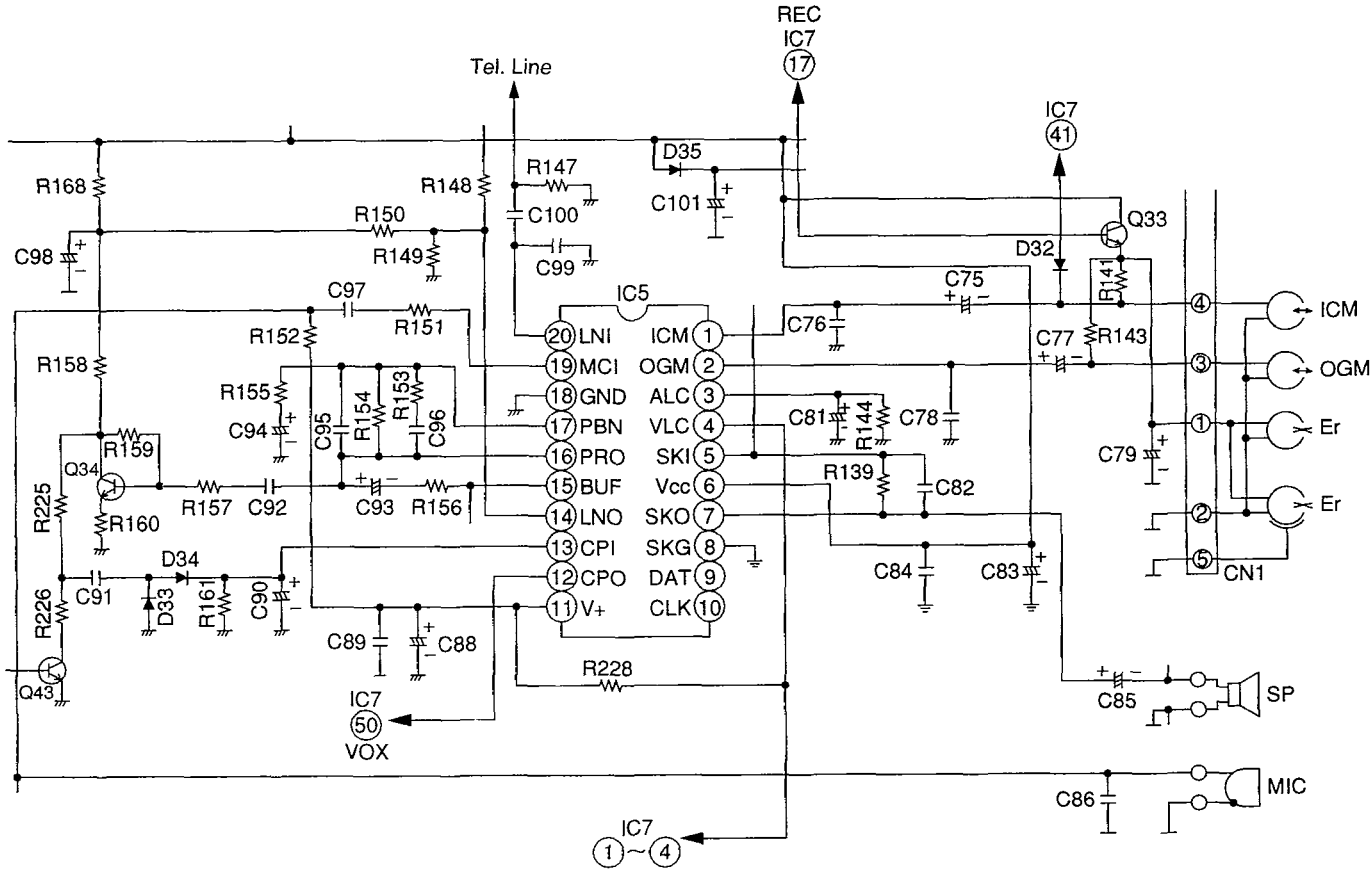
The voltage is applied to the Erase Head, thus the Erase Head is activated.

The bias current is applied to the R/P Head via Q33, R140 and R141.

The DC current flow is as follows;

6 V DC → Q33 turns ON (by High level of IC7 pin 17) → Emitter of Q33 → Collector of Q33 →Erase Head.

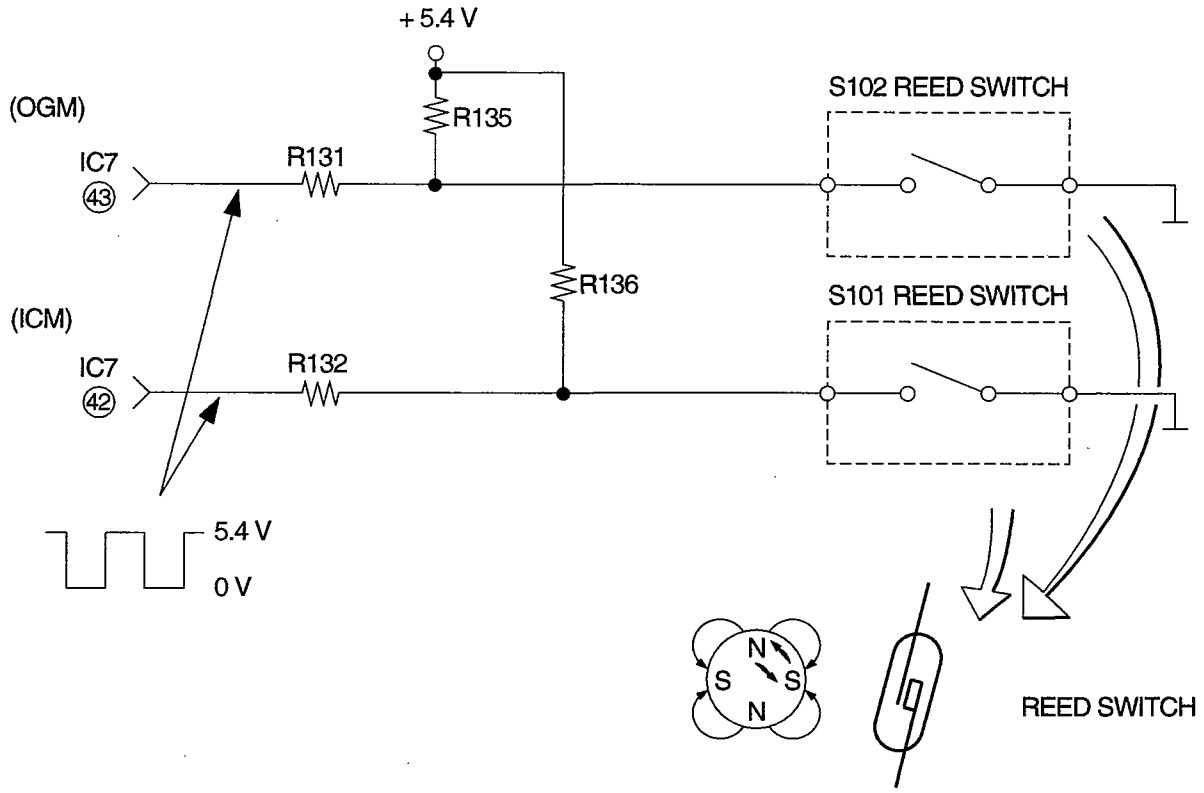
Circuit Diagram



■ICM AND OGM TAPE ROTATION DETECTOR CIRCUIT

Circuit Operation:
When there are changes in the direction of the magnetic field caused by the rotation of the four-pole ferrite magnet, they are detected by the Reed Switch. This output is added to the microcomputer input.
(S101) → R132 → Pin 42 of IC7 (ICM)
(S102) → R131 → Pin 43 of IC7 (OGM)

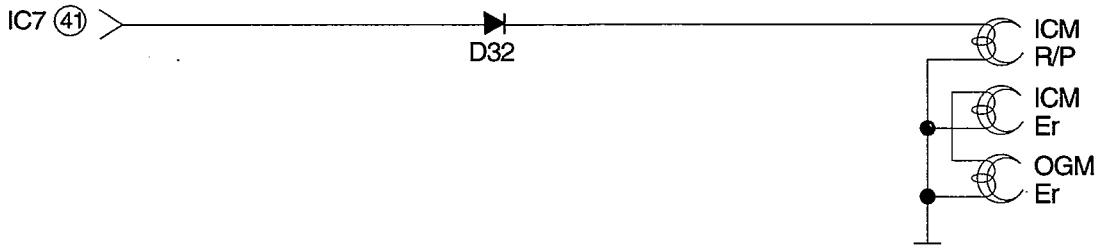
Circuit Diagram



■QUICK ERASE CIRCUIT

Circuit Operation:
If the erase switch is turned on, DC current will flow as follows:
Pin 41 of IC7 (High Level) → D32→ICM R/P Head

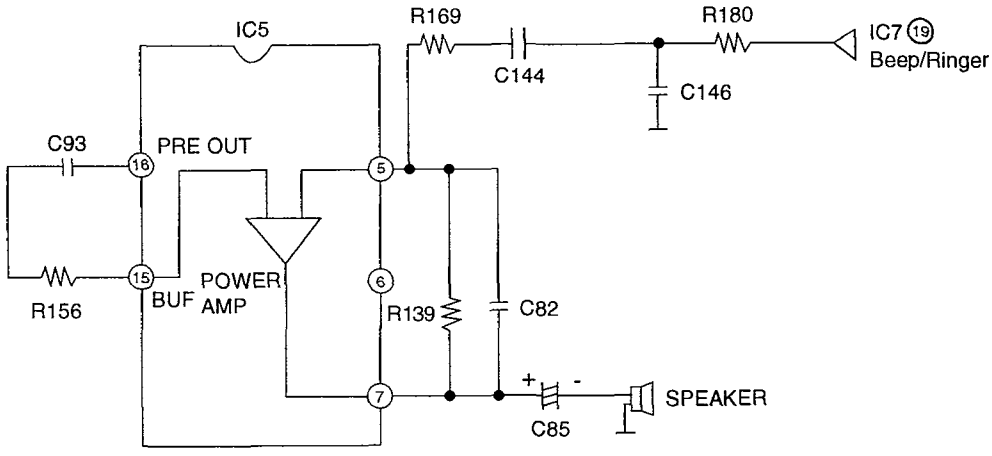
Circuit Diagram



■ MONITOR CIRCUIT AND SPEAKER MUTE CIRCUIT

Circuit Operation:
The monitor signal flow is as follows:
The Line signal and Head signal are amplified by IC5 in each mode. Then these signals appear at Pin 7 of IC5.
Pin 16 of IC5 → C93 → R156 → Pin 15 of IC5 → Pin 7 of IC5 → C85 → Speaker.
The speaker beep tone path: Pin 19 of IC7 → R180 → D36 → R169 →Pin 5 of IC5 → Pin 7 of IC5 → C85 → Speaker.

Circuit Diagram

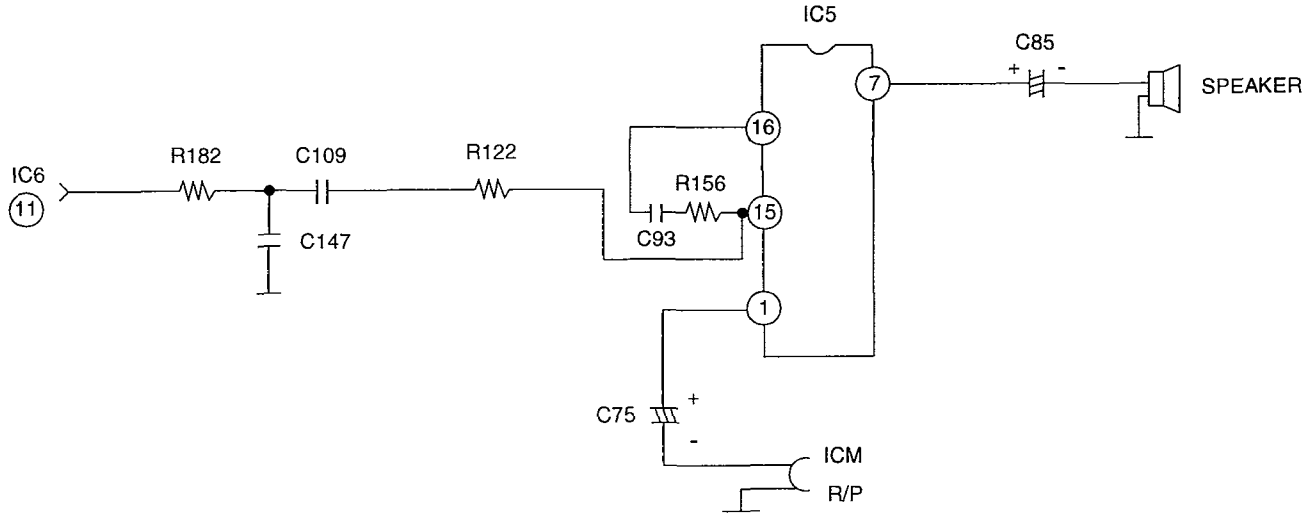


■ SPEECH SYNTHESIS SIGNAL CIRCUIT

• Audio speaker monitor source:
In the circuit diagram, the audio signal from Pin 11 of IC6 takes the following path to the monitoring speaker.
Pin 11 of IC6 → R182 → C109 → R122 → Pin15 of IC5 → Pin 7 of IC5 → C85 → Speaker.

• Audio record signal source:
Pin 11 of IC6 → R182 → C109 → R122 → Pin15 of IC5 → Pin1 of IC5 → C75 → ICM Head.

Circuit Diagram

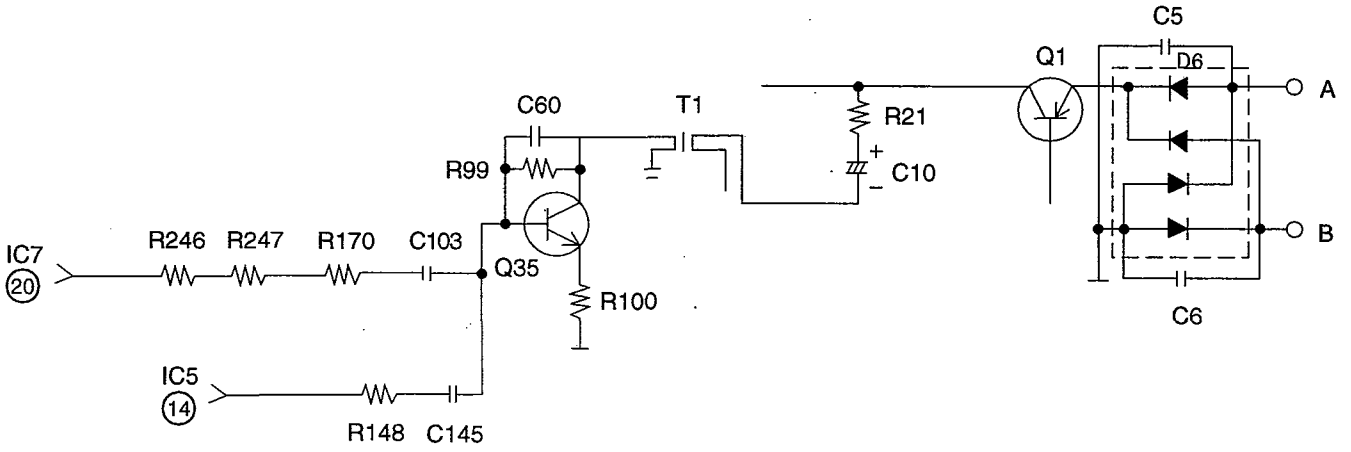


■ LINE OUTPUT CIRCUIT

Each signals are sent to the telephone line as follows.

- (Beep Tone) → Pin 20 of IC7 → R170 →C103 → Q35 → T1→ C10 → R21 → Q1 → D6 → Telephone Line.
- (Tape Playback Signal) Pin 14 of IC5 → R148 → C145

Circuit Diagram



■ RING DETECTOR CIRCUIT

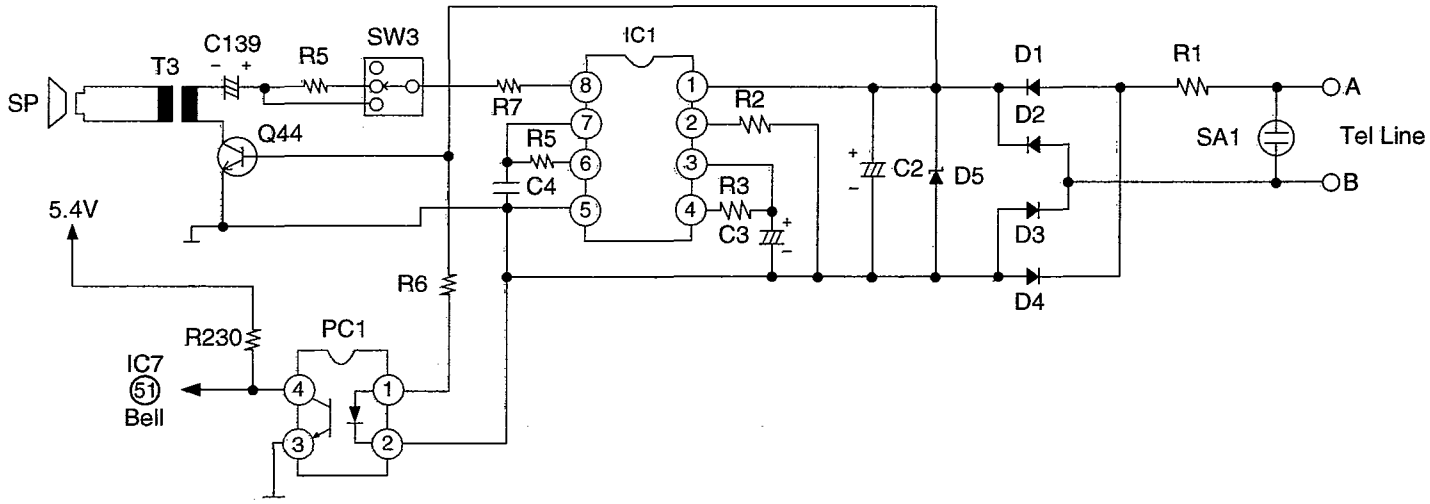
Function:

This circuit activates the CPU to respond to the ring signal from the telephone line during the ANSWER mode of operation.

Circuit Operation:

When a Ring Signal is inputted from the telephone line (See telephone line interface.), this ring signal flows through → PC1 Pin 1→ PC1 Pin 2, hence photocoupler → PC1 Pin 4-3 will turn ON.
As a result, Pin 51 of IC7 goes Low, indicating that Ring Signal was inputted.

Circuit Diagram

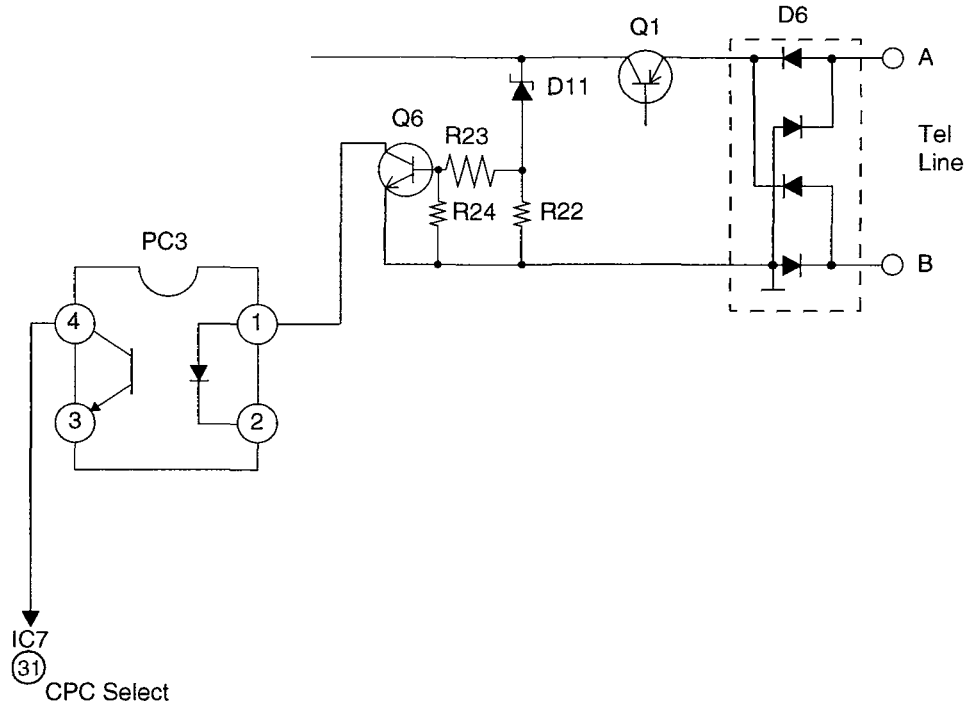


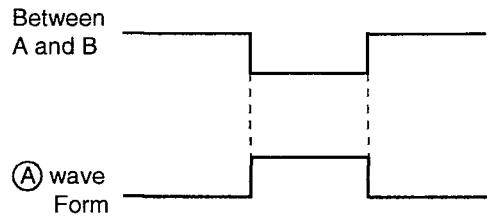
■CPC (CALLING PARTY CONTROL) DETECTOR CIRCUIT

Function:
The CPC DETECTOR complements the units shut off, in the ANSWER mode, after the caller hangs up. At this time, The CPC DETECTOR takes over. The CPC DETECTOR senses the temporary disconnection of the telephone line which occurs after the caller hangs up.

Circuit Operation:
When the unit seizes a line, current will flow through Diode bridge (D6) Q1. As a result, voltage will be applied across D11, causing current to flow to the base of Q6 via R23, causing Q3 will trun ON.
Consequently, current will flow Pin 1 of PC3→Pin 2 as a result Pin 4 of PC3 will go low.
As a result, Pin 31 of IC7 will go High. If then the line is momentarily cut, line current will cease to flow, and voltage will no longer be applied across D11 thus and Q6 will turn OFF. Pin 31 of IC7 will go High, hence this condition will be detected.

Circuit Diagram



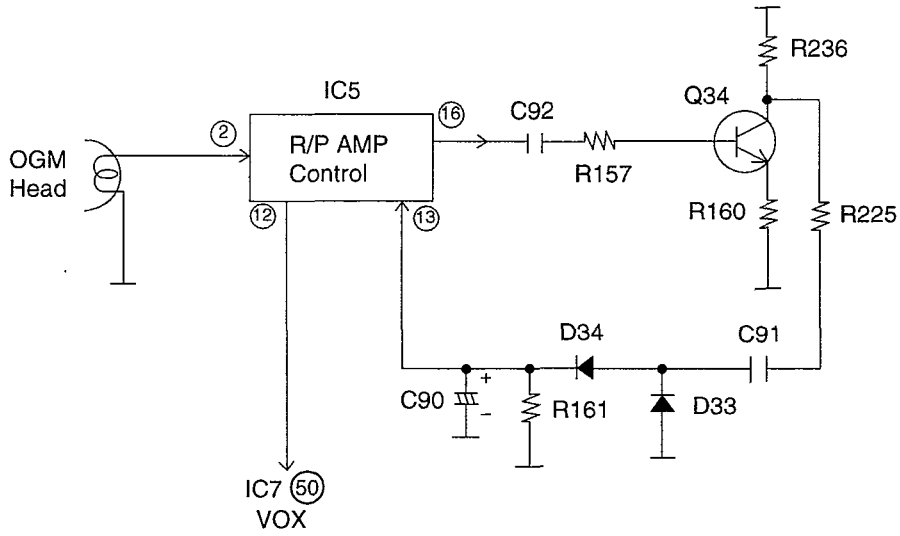


■ VOX CIRCUIT

Function:
The VOX circuit is designed to detect cyclic signals in which the signal is ON for 100 msec. to 1 sec, continuous sounds and no sound at all.
After detection, the CPU issues an instruction that makes VOX operation possible.
This means that when a telephone call has ended, the phone is reset and is ready to receive the next call.

Circuit Operation:
A signal output from terminal Pin 16 of IC5 passed through C92, R157 and inputted to Pin 13 of IC5 →Pin 12 of IC5→Pin 50 of IC7.
When sound is present, the output at Pin 12 of IC5 becomes a low level, while no-sound its output becomes a high level.

Circuit Diagram

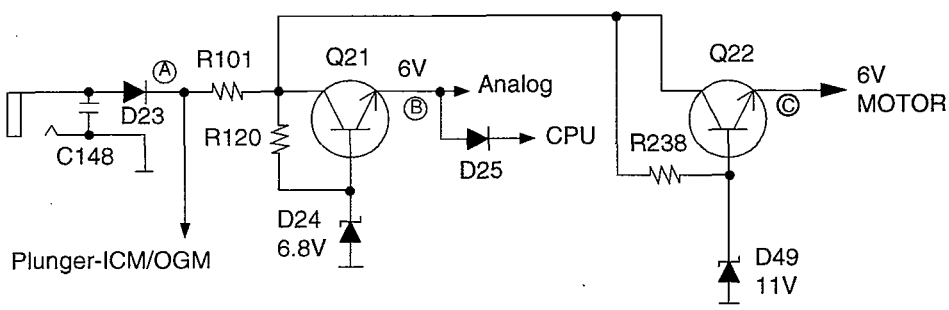


■ POWER SUPPLY CIRCUIT

Function:
Power from the AC adapter passes through the 1-stage regulating block consisting of Q21, Q22 and provides system voltages of 6V.

Circuit Operation:
Power from the AC adapter is supplied directly to IC4(Ⓐ). Q21 is the first stage regulated power supply. The voltage at point Ⓑ is regulated to 6 V by the 6.8 V zener voltage of D24. The 6 V voltage is shifted by D25 to 5.4 V which is used to power the CPU, etc.
Q22 is the first stage regulator power supply. The voltage at point Ⓒ is regulator to 10V by the 11V zener voltage of D24 The 6V It's power circuit etc.

Circuit Diagram



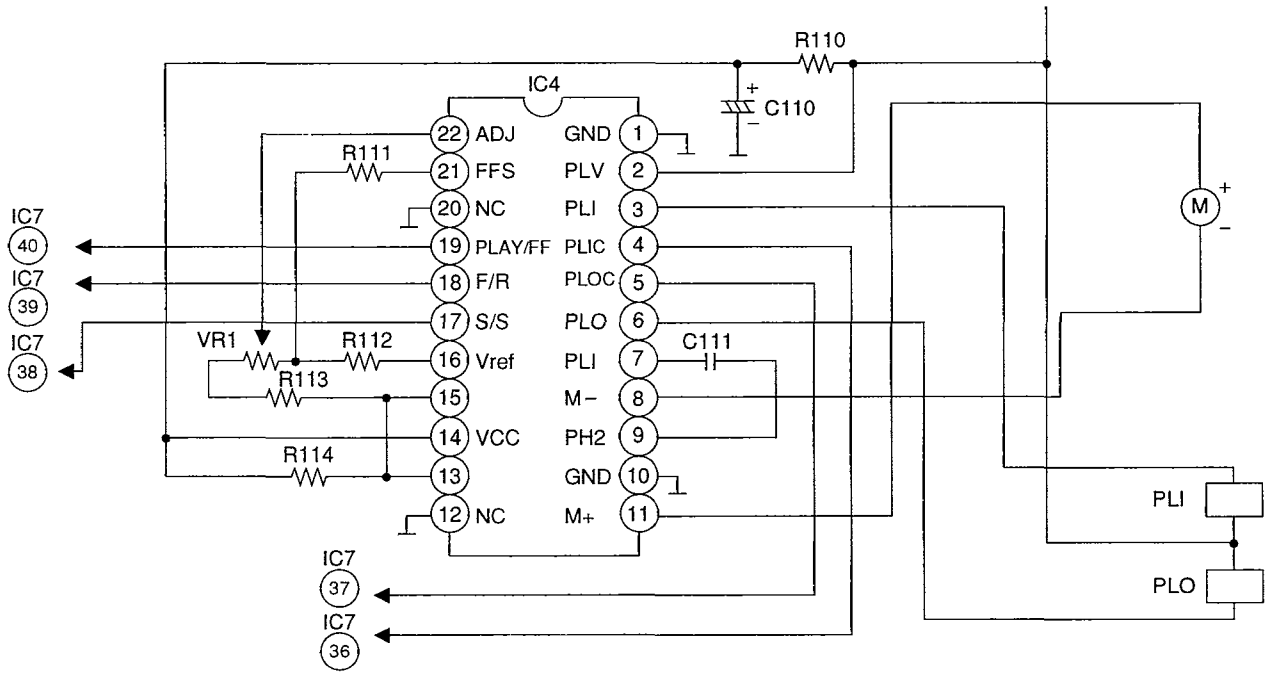
■MOTOR DRIVE CIRCUIT

Playback (or Recording)
When Pin 40 of IC7 becomes Low and Pin 39 of IC 7 becomes Low and Pin 38 of IC 7 becomes High.
The governor (IC4) is activated and the motor voltage is regulated, hence the motors rotate at a constant speed.

Fast Forward
Pin 40 of IC7 becomes High and Pin 39 of IC7 becomes Low and Pin 38 of IC7 becomes High→the governor (IC4) is activated → the motor rotates at high speed.

Rewind
Pin 40 of IC 7 becomes High and Pin 39 of IC 7 becomes High and Pin 38 of IC 7 becomes High→the governor (IC4) is activated → the motor rotates at high speed in the reverse direction.

Circuit Diagram



TROUBLESHOOTING GUIDE

1 FLOW CHART for DECK

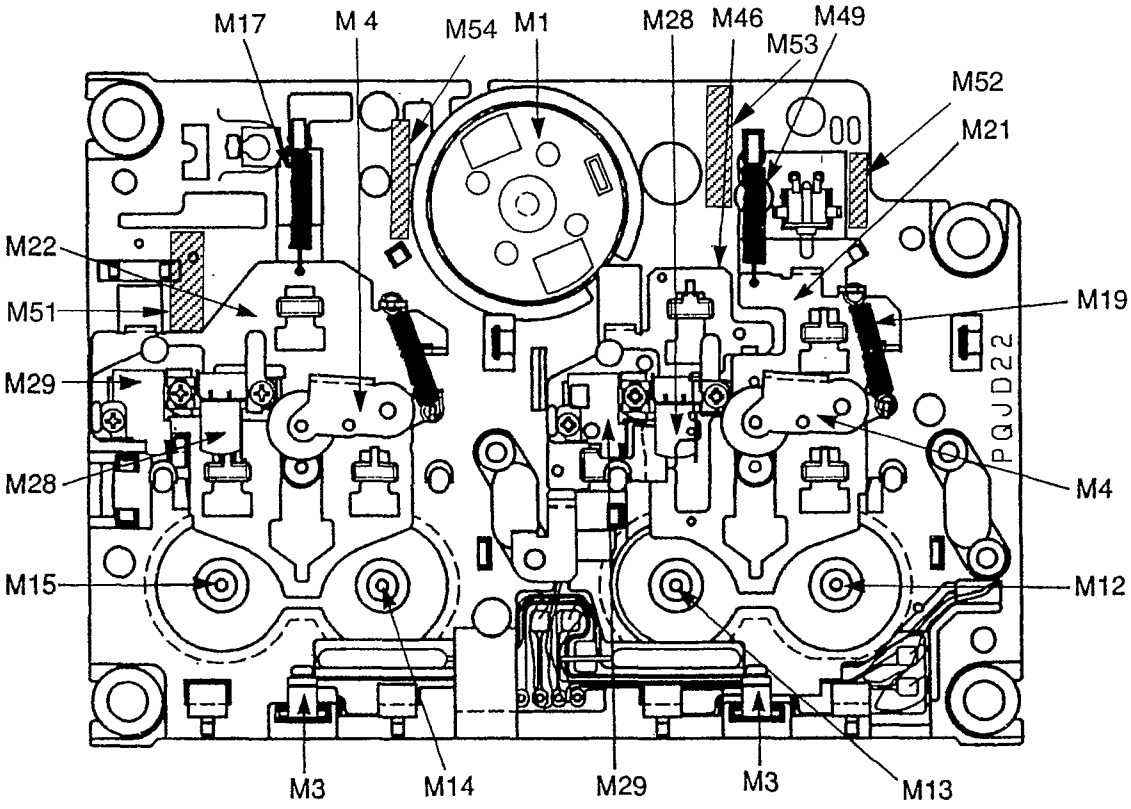


Fig. 13

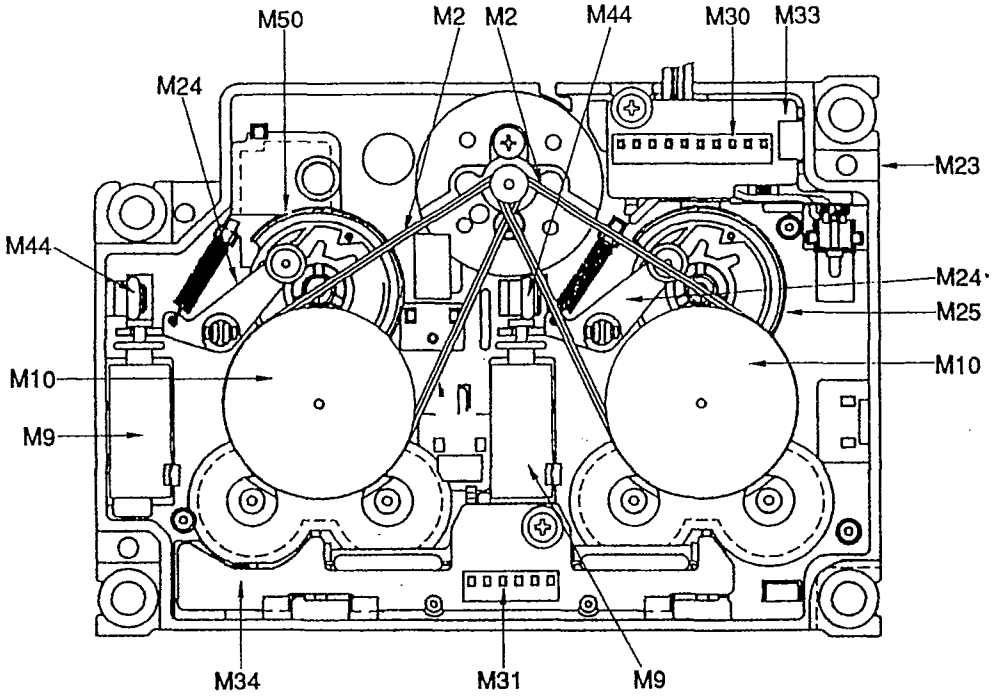
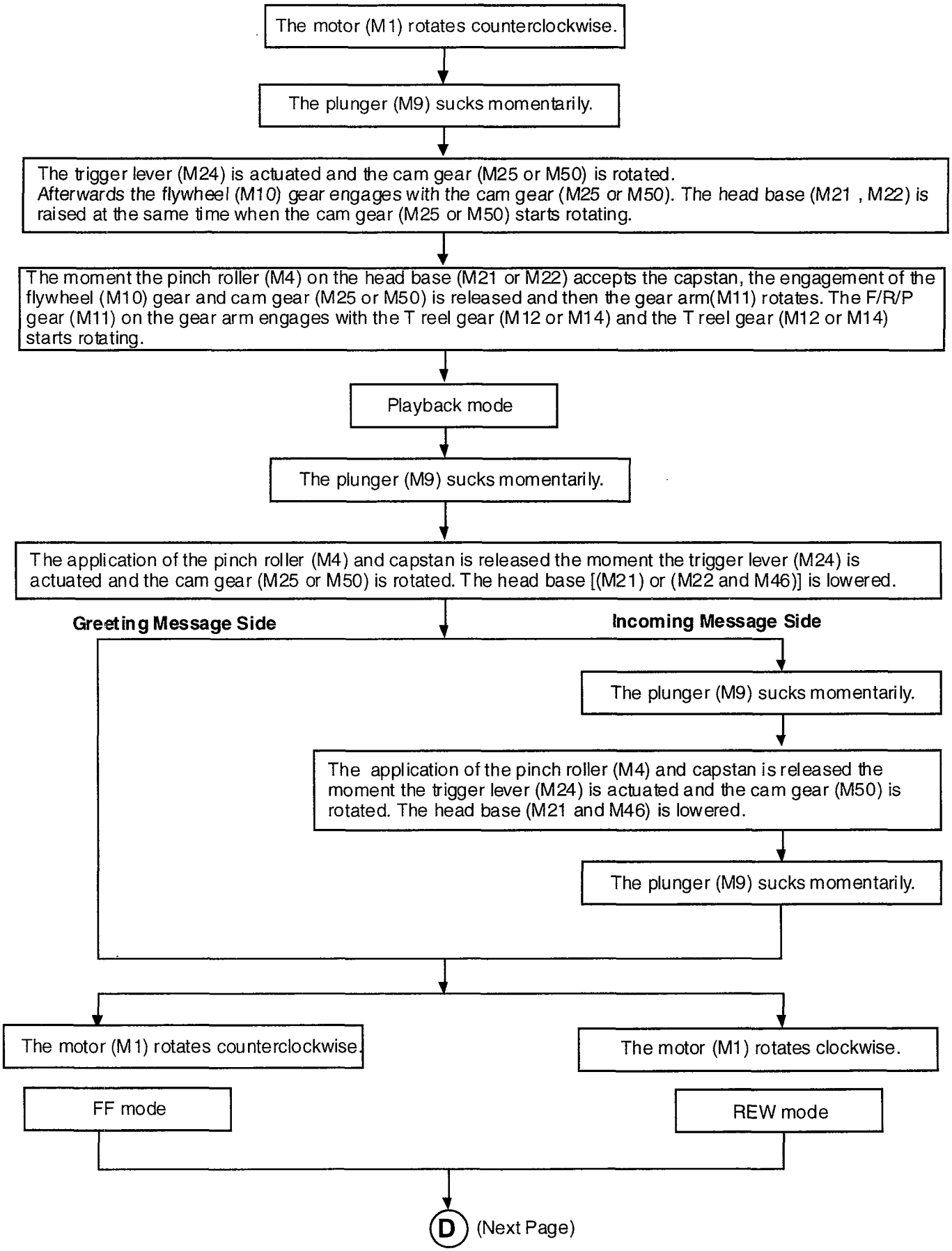
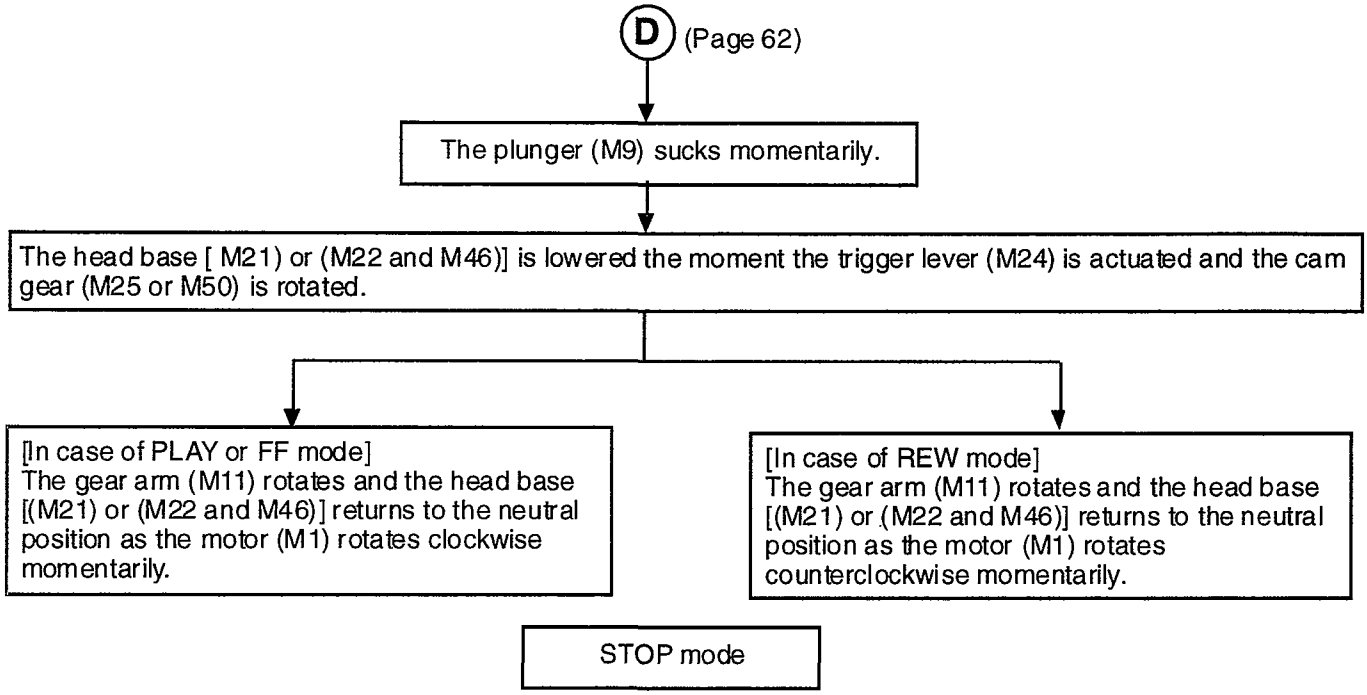


Fig. 14


The motor (M1) rotates counterclockwise.
The plunger (M9) sucks momentarily.
The trigger lever (M24) is actuated and the cam gear (M25 or M50) is rotated.
Afterwards the flywheel (M10) gear engages with the cam gear (M25 or M50). The head base (M21 , M22) is raised at the same time when the cam gear (M25 or M50) starts rotating.
The moment the pinch roller (M4) on the head base (M21 or M22) accepts the capstan, the engagement of the flywheel (M10) gear and cam gear (M25 or M50) is released and then the gear arm(M11) rotates. The F/R/P gear (M11) on the gear arm engages with the T reel gear (M12 or M14) and the T reel gear (M12 or M14) starts rotating.
Playback mode
The plunger (M9) sucks momentarily.
The application of the pinch roller (M4) and capstan is released the moment the trigger lever (M24) is actuated and the cam gear (M25 or M50) is rotated. The head base [(M21) or (M22 and M46)] is lowered.
Greeting Message Side
Incoming Message Side
The plunger (M9) sucks momentarily.
The application of the pinch roller (M4) and capstan is released the moment the trigger lever (M24) is actuated and the cam gear (M50) is rotated. The head base (M21 and M46) is lowered.
The plunger (M9) sucks momentarily.
The motor (M1) rotates counterclockwise.
The motor (M1) rotates clockwise.
FF mode
REW mode
D
(Next Page)

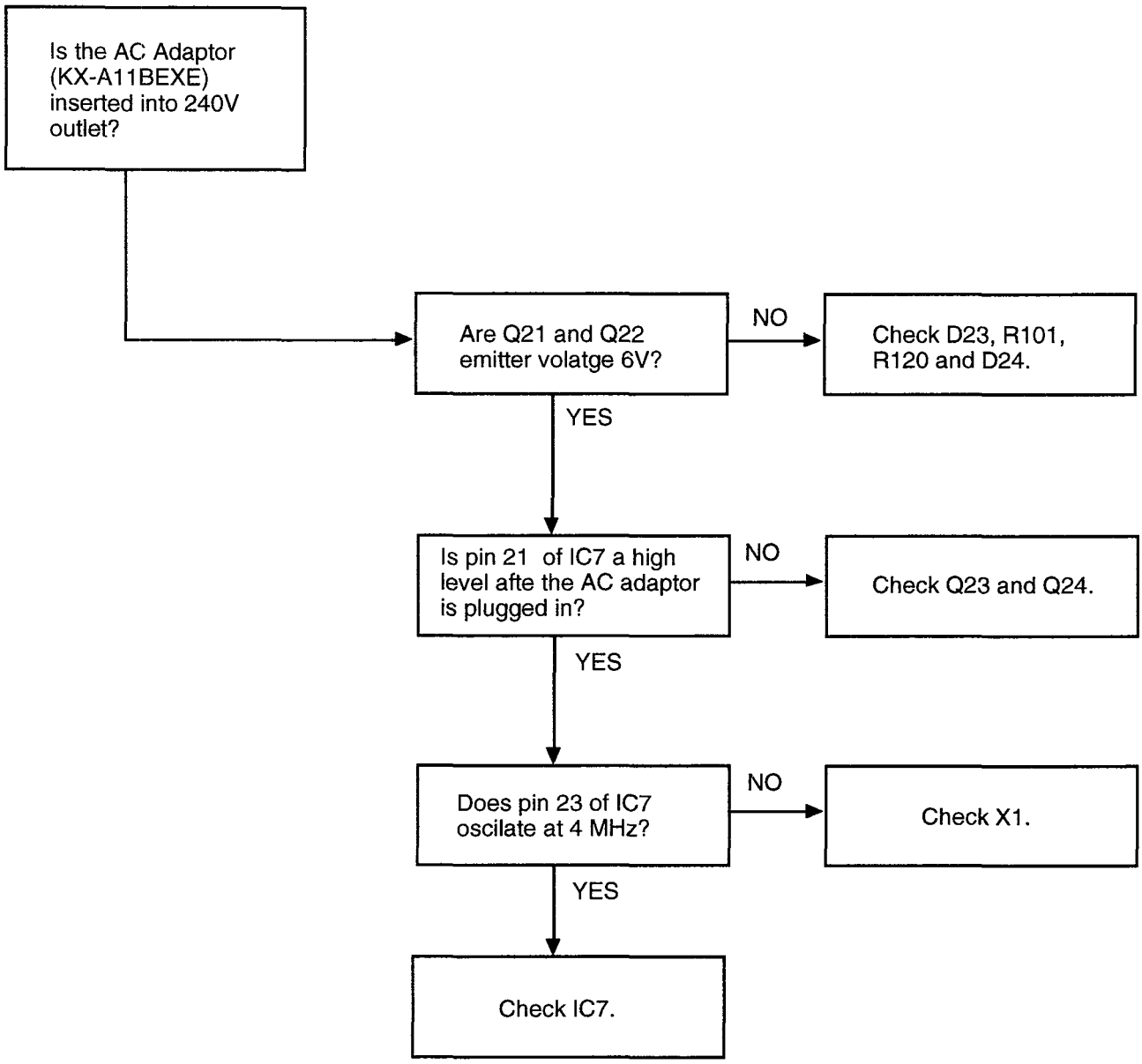


2. SERVICE HINTS

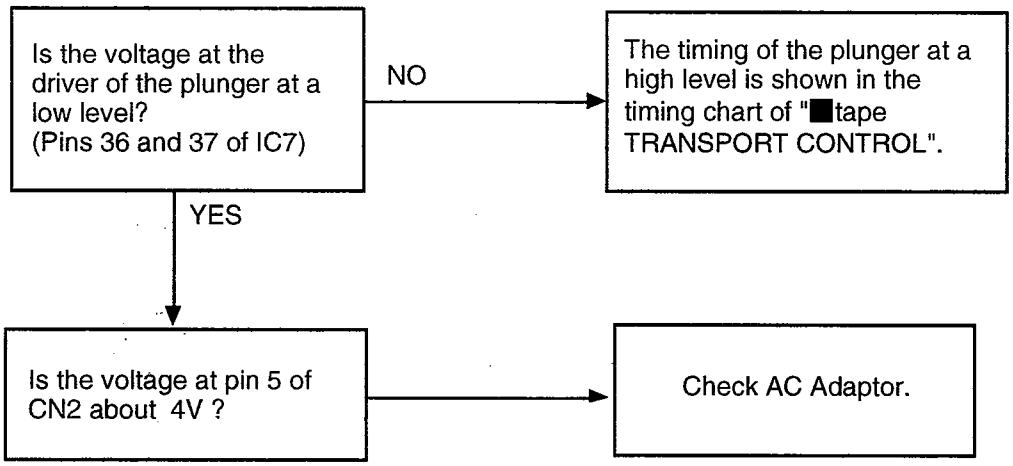
SYMPTOM	CURE
Does not ring.	Repalce IC1 and Ringer Switch.
Answering Machine rings, when no one calls.	Check Pin 3 and 4 of PC1 for short.
OGM recording distorted.	Check for cold solder joints on IC4.
No PWR/AFTER PWR fixed no plunger a activation.	Check Q30 and Q31.
Intermittent rewind.	Check S41.
Goes into hold after taling ICM.	Check Pin 50 of IC7.
Keypad inop.	Check solder connections on CN301 and IC301.
Can dial out but incoming calls get busy signal.	Check Q1, Q2, D6 and SA1.
Holds line constantly.	Check Q1 and Q2.
Would not record all OGM.	Check IC4.

3. TAM SECTION

1) FUNCTIONS DO NOT OPERATE.



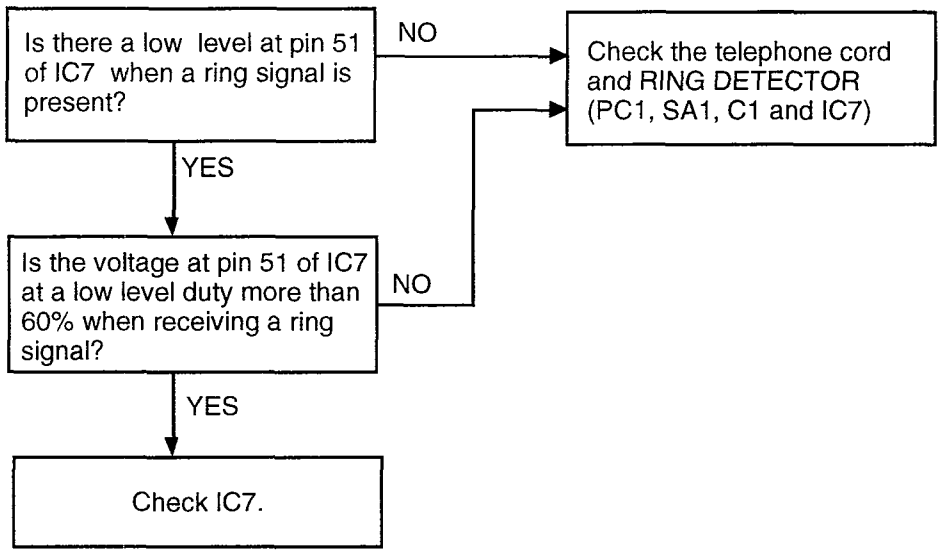
2) THE PULL OF PLUNGER IS POOR NONE AT ALL.



3) OGM END MARK DETECTION.
Check the Vox Circuit.

4) FAST ERASE DOES NOT WORK
Check D32 and IC7.

5) DOES NOT ANSWER TELEPHONE CALL



6) •ICM CONTINUES TO RECORD AFTER THE CALLER HANGS UP.
•END OF MESSAGE IS CLIPPED WHEN CALLER HANGS UP.

When caller hangs up, the KX-T2726E can detect the following 4 signal type.

A. CPC pulse.
B. Dial tone or other continuous tones.
C. Silence.
D. Cycle signals.

A. Check CPC DETECTOR CIRCUIT (R13, R14, R15, R16, R178, Q1, Q3 and Pin 31 of IC7)
B., C., D.
Check VOX DETECTOR CIRCUIT (Pin 12 of IC5, Pin 50 of IC7, C35, R157, Q34, C91, R161, D33 D34.)

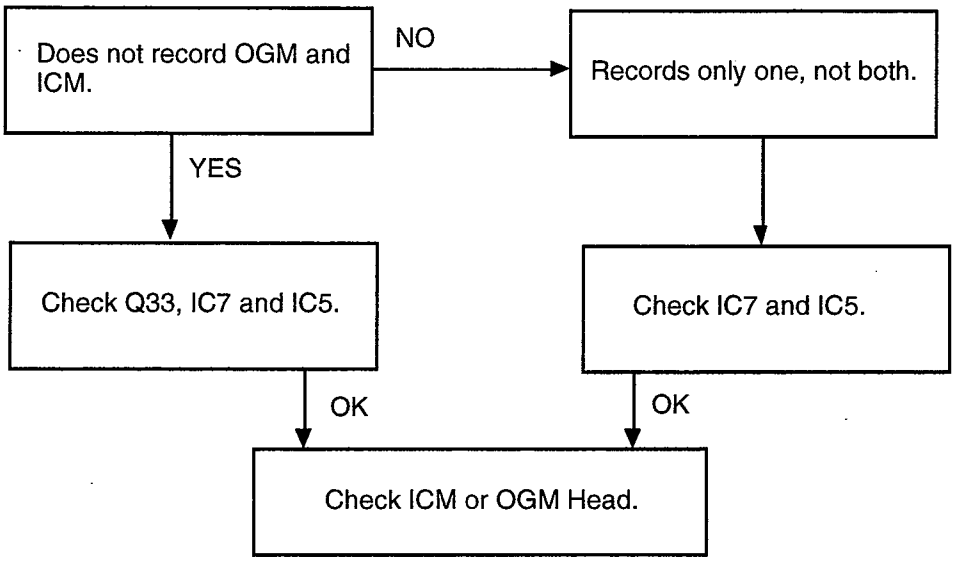
7) REMOTE CONTROLLER DOES NOT WORK OR RESPONSE IS POOR.
The following are considered for the causes of no remote reception:

A. The security code may not be the same as set on the unit.
B. High distortion in LINE OUTPUT CIRCUIT causing interference between the transmitting signal and the remote signal.
C. Excessive loss in telephone line.

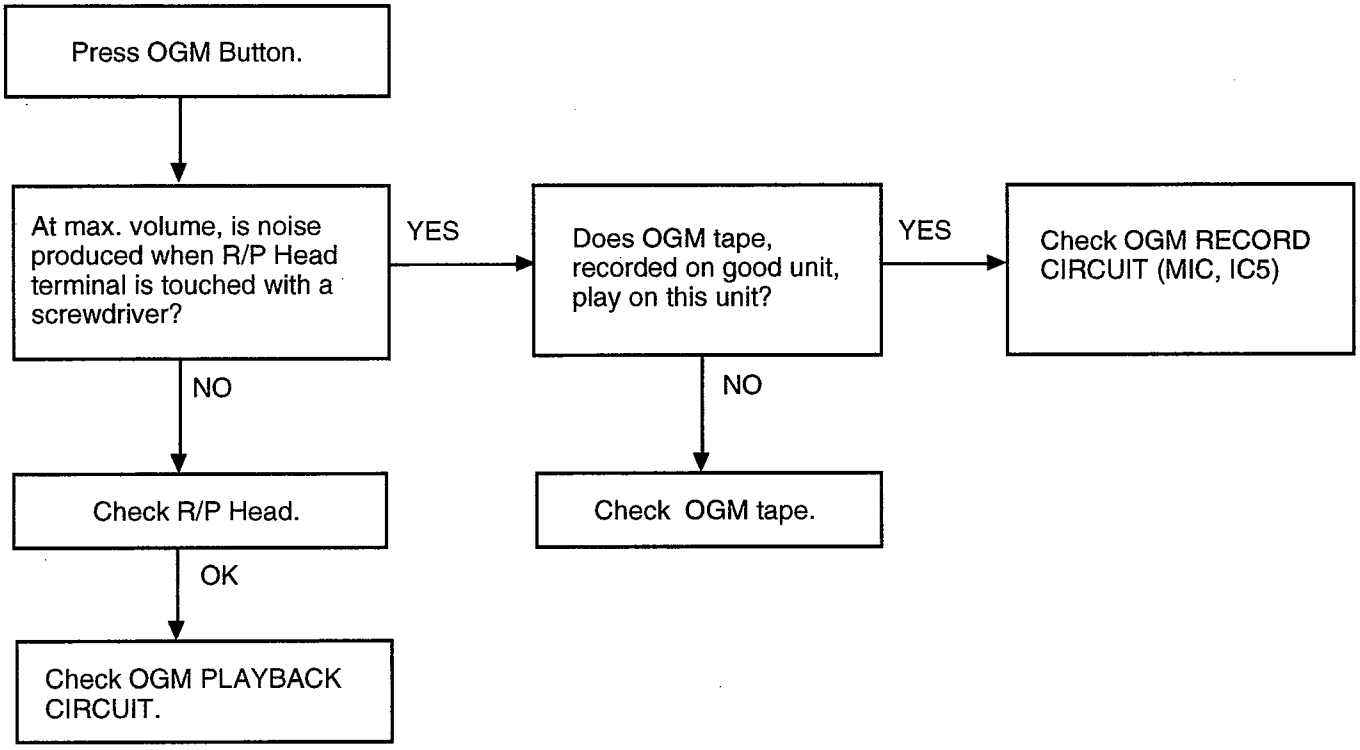
A. Check the security code of the unit.
B. Check LINE OUTPUT CIRCUIT (Q6, C143 and R170)
C. Test on a telephone line known to be working properly.

If all of the above check N.G., check the remote signal detect circuit (IC7)

8) DOES NOT RECORD

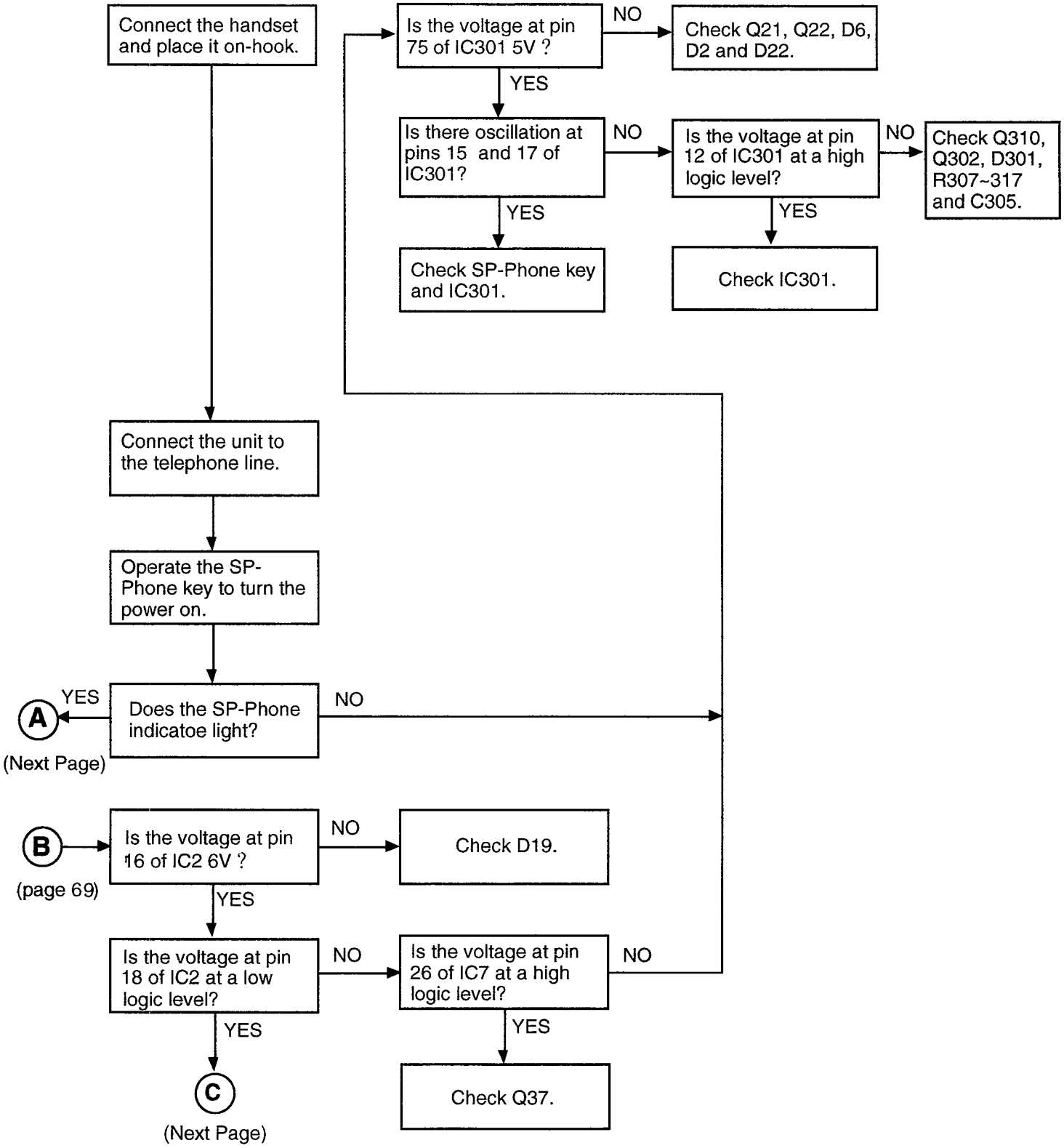


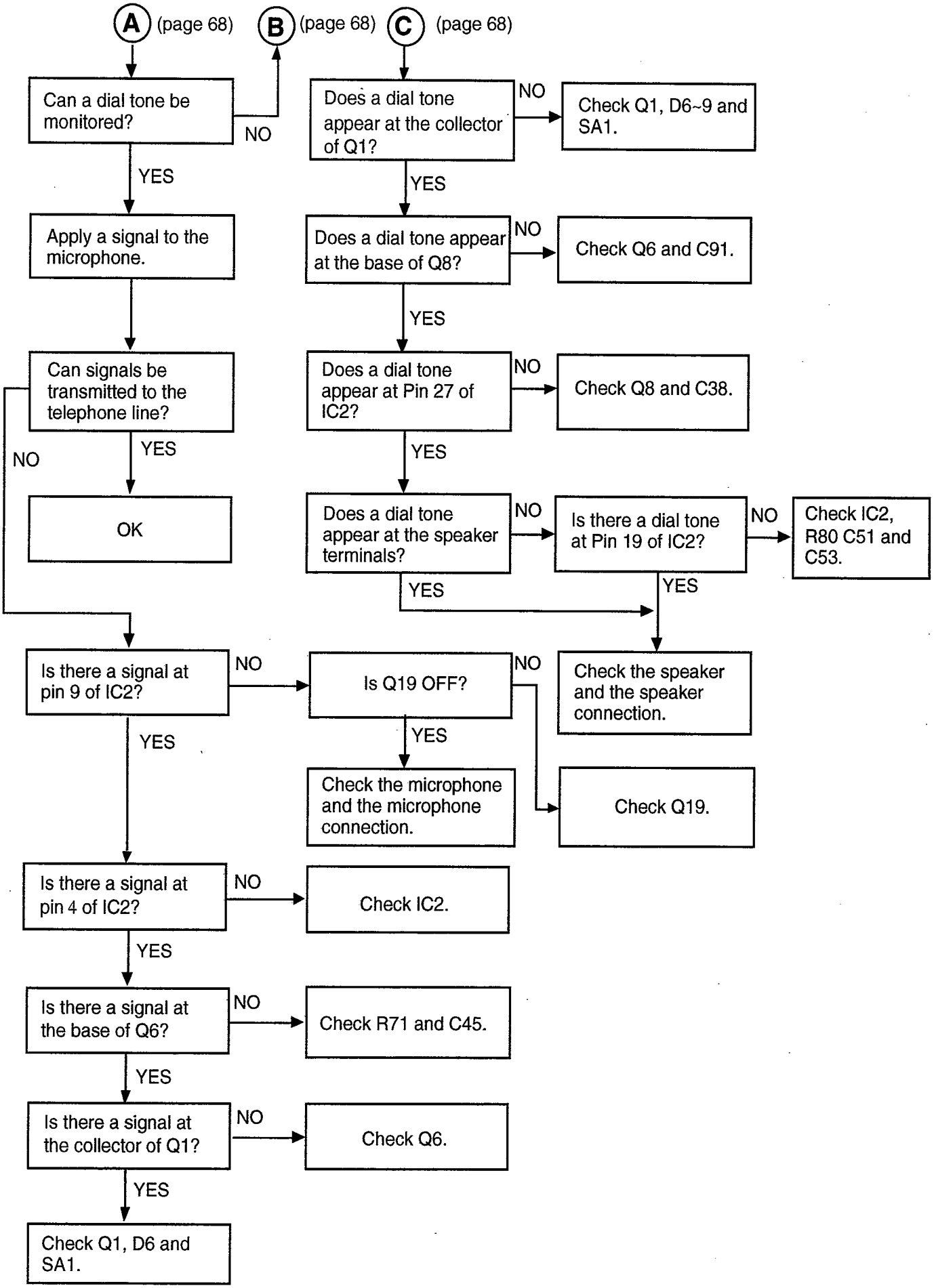
9) NO OR LOW OGM PLAYBACK



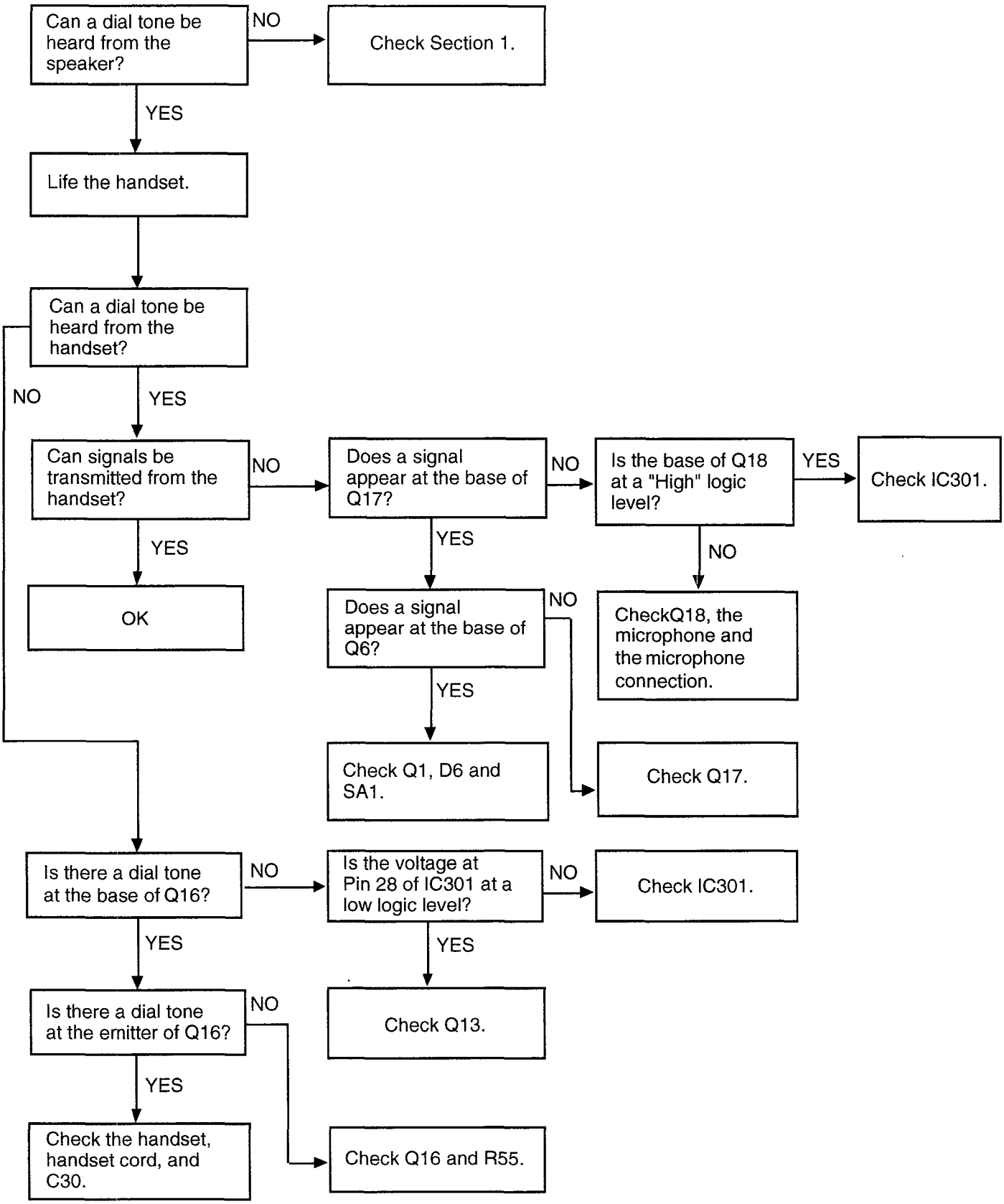
4. ITS SECTION

1) UNIT DOES NOT TURN ON

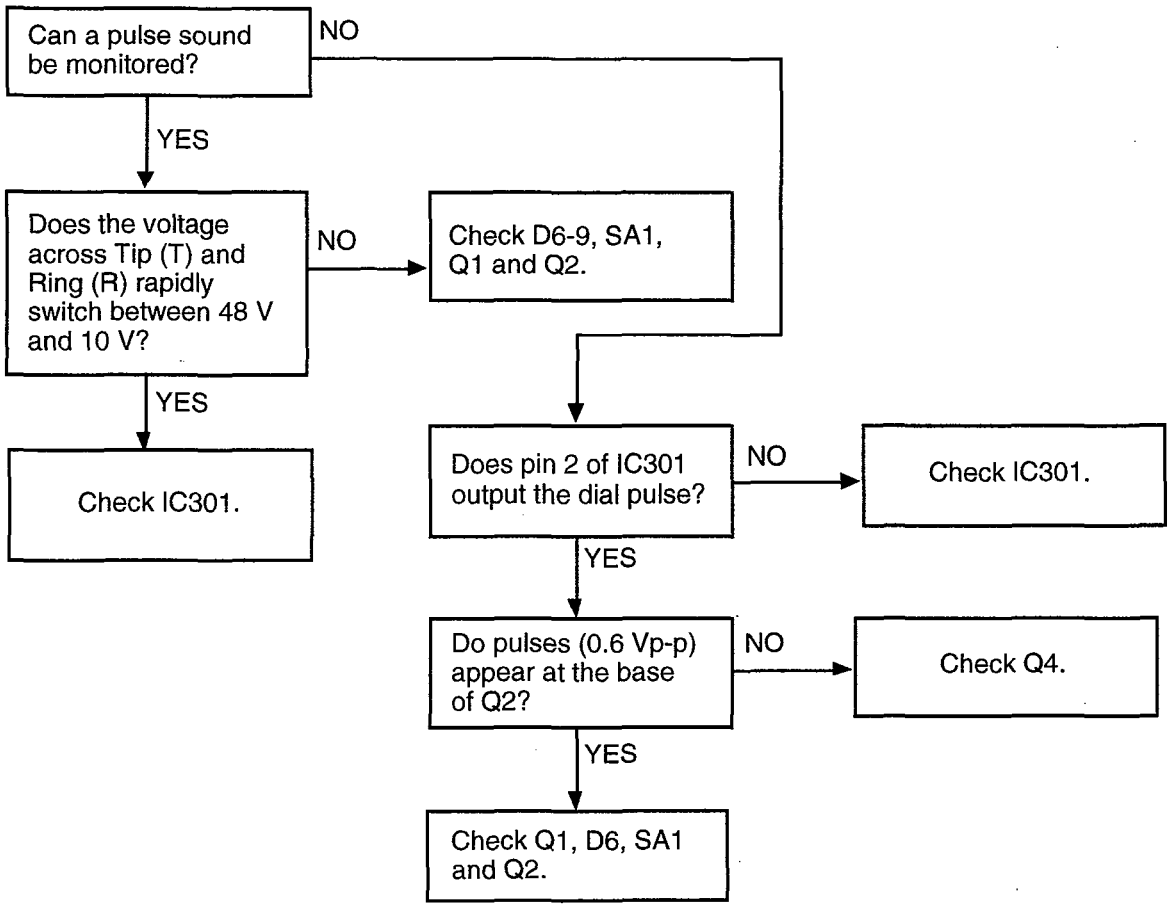



A (page 68)
B (page 68)
C (page 68)
Can a dial tone be monitored?
NO
YES
Apply a signal to the microphone.
Can signals be transmitted to the telephone line?
NO
YES
OK
Is there a signal at pin 9 of IC2?
NO
YES
Is there a signal at pin 4 of IC2?
NO
YES
Check IC2.
Is there a signal at the base of Q6?
NO
YES
Check R71 and C45.
Is there a signal at the collector of Q1?
NO
YES
Check Q6.
Check Q1, D6 and SA1.
Does a dial tone appear at the collector of Q1?
NO
YES
Check Q1, D6~9 and SA1.
Does a dial tone appear at the base of Q8?
NO
YES
Check Q6 and C91.
Does a dial tone appear at Pin 27 of IC2?
NO
YES
Check Q8 and C38.
Does a dial tone appear at the speaker terminals?
NO
YES
Is there a dial tone at Pin 19 of IC2?
NO
YES
Check IC2, R80 C51 and C53.
Is Q19 OFF?
NO
YES
Check the microphone and the microphone connection.
Check the speaker and the speaker connection.
Check Q19.

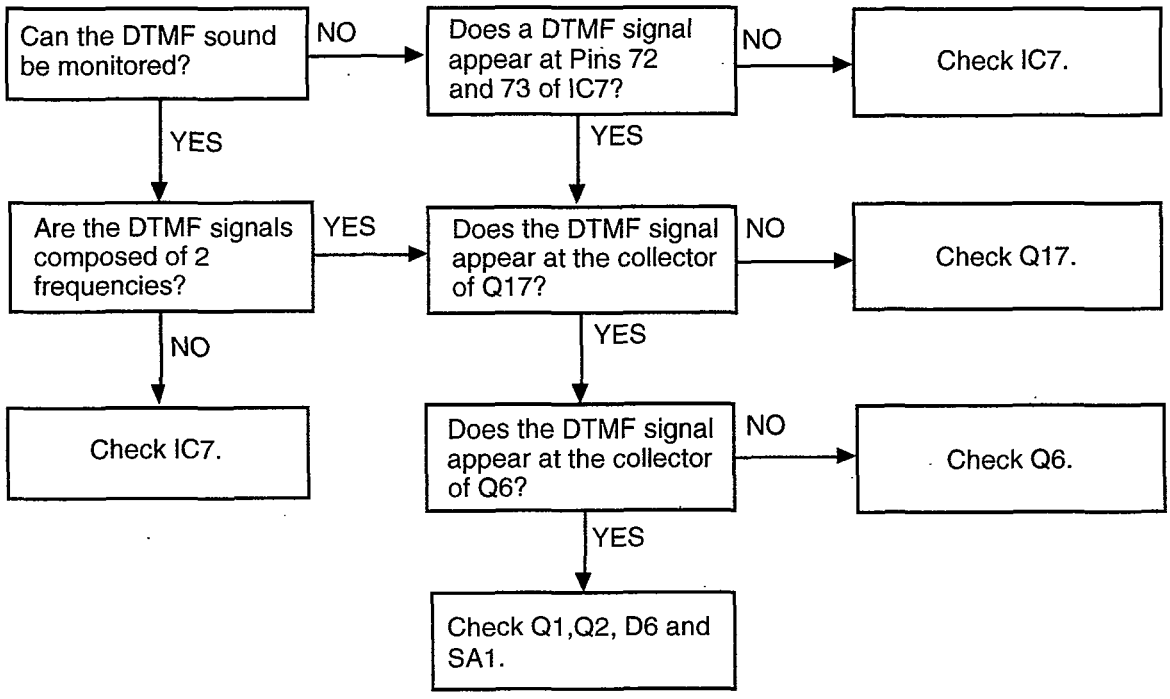
2. PROBLEMS WITH THE HANDSET



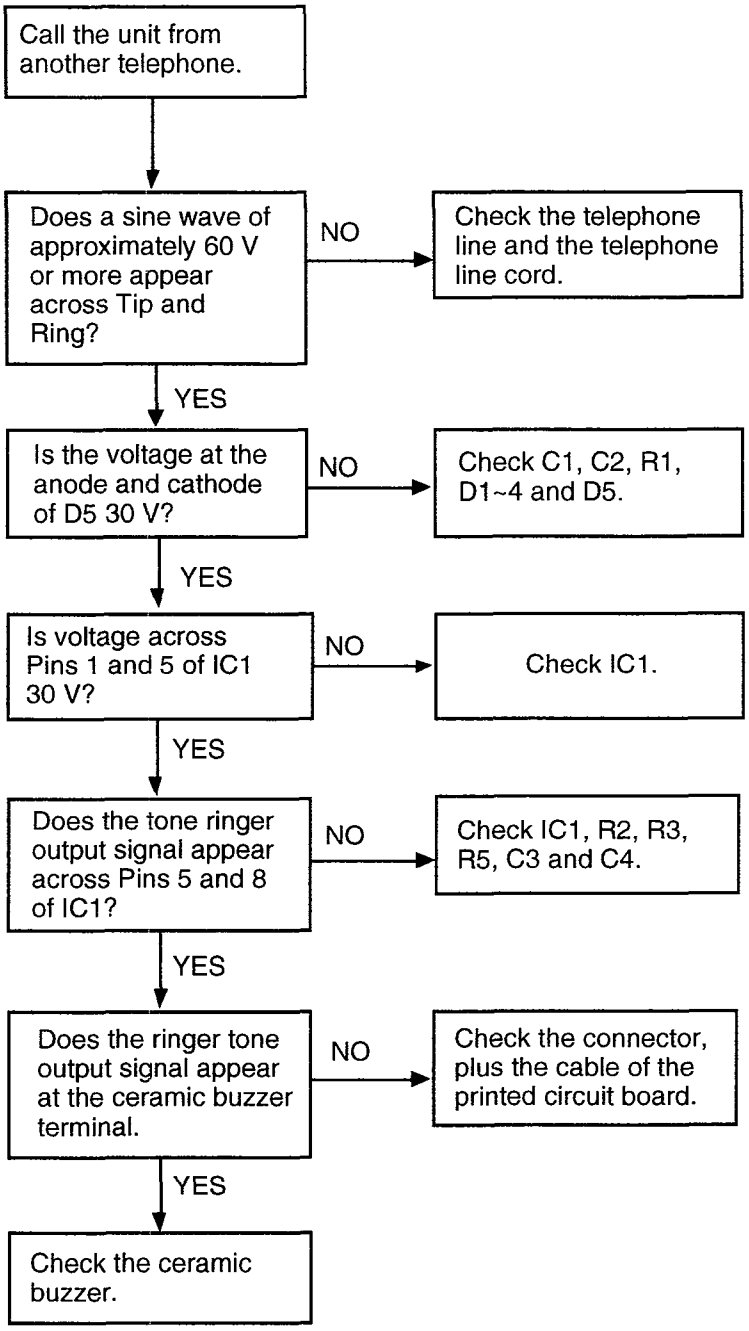
3. PULSE DIALING PROBLEMS



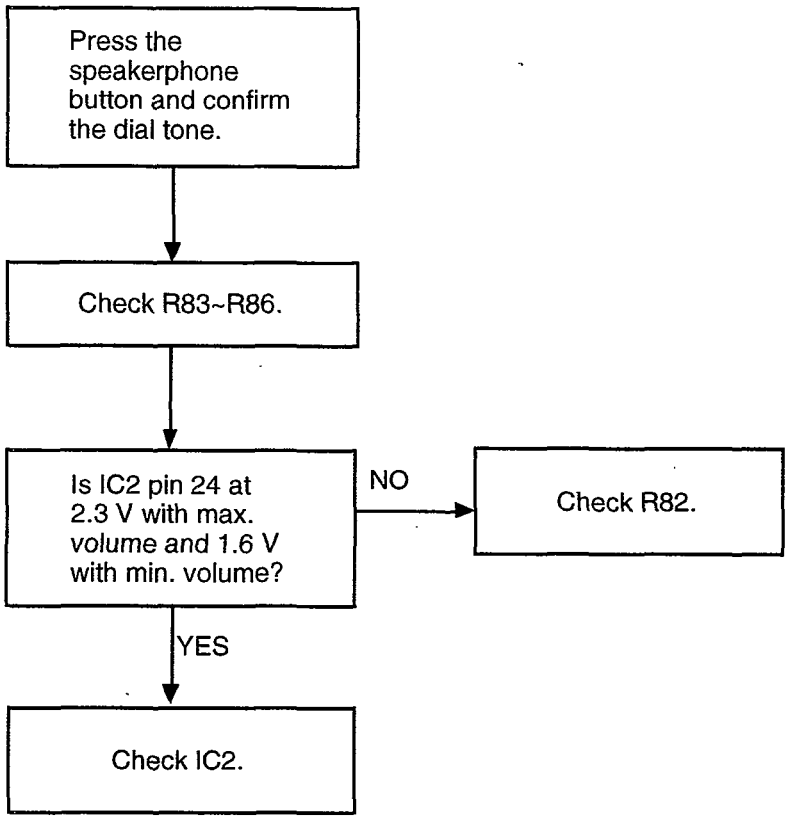
4. TONE DIALING PROBLEMS



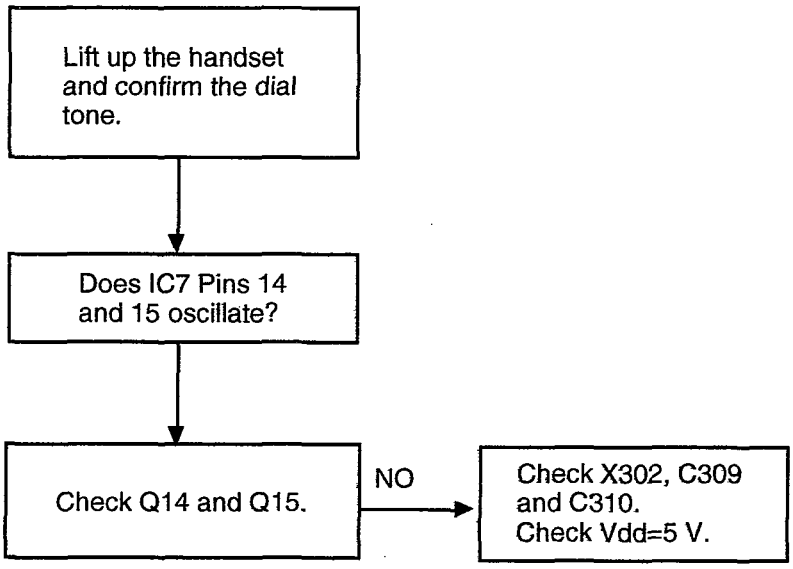
5. NO "RINGING" SOUND WHEN A RING SIGNAL IS INPUT



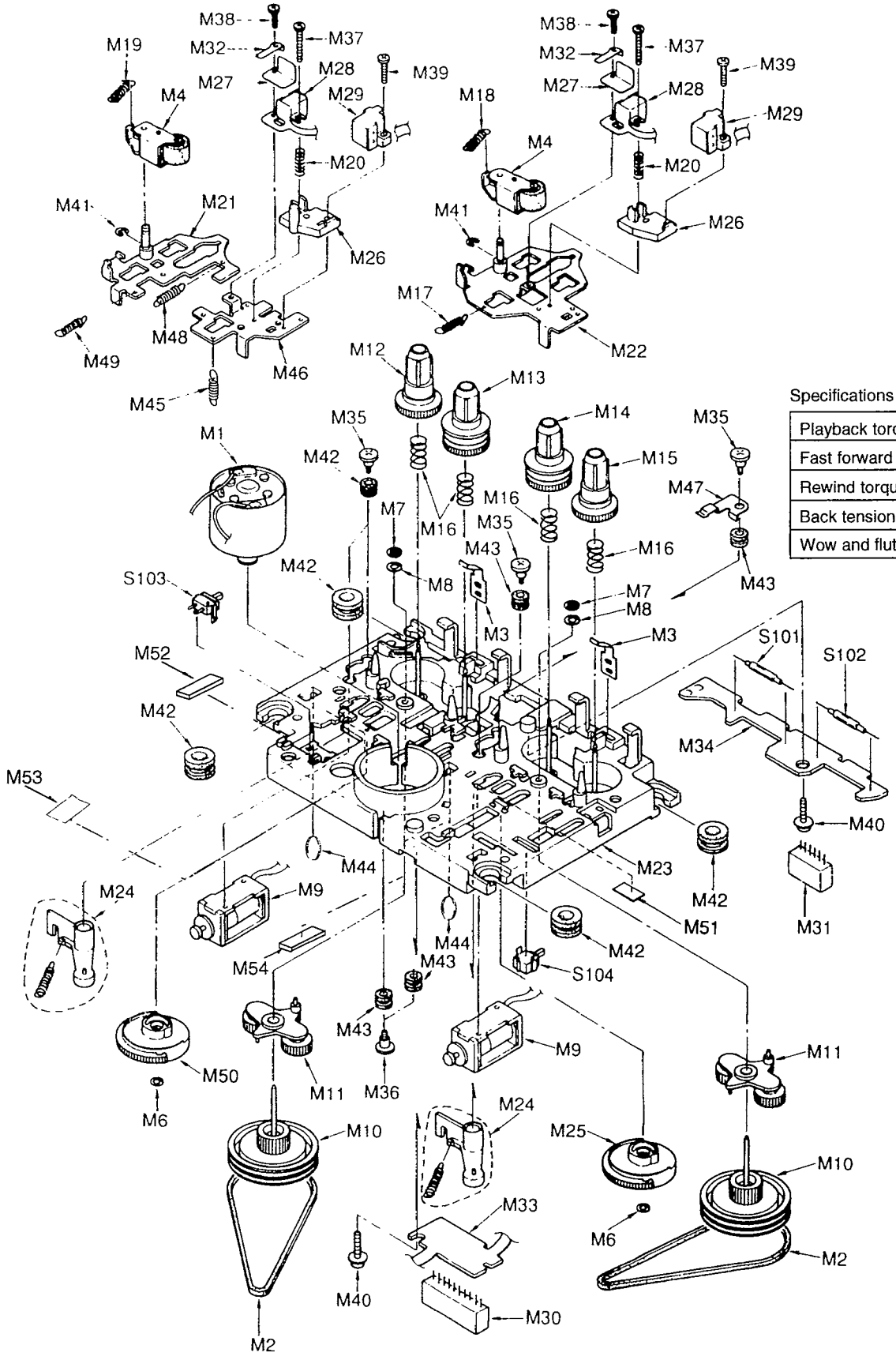
6. IF THE ELECTRONIC VOLUME OF THE SPEAKERPHONE DOES NOT WORK



7. IF THE ELECTRONIC VOLUME OF THE HANDSET DOES NOT WORK



CASSETTE DECK PARTS LOCATION



Actual Size of Screws

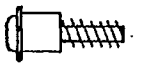
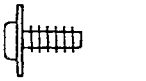
Ret No.	Figure
M35	
M36	
M37	
M38	
M39	
M40	

Specifications

Playback torque	10~20 g · cm
Fast forward torque	10~20 g · cm
Rewind torque	25 g · cm
Back tension	0.5~3.5 g · cm
Wow and flutter	0.65%

Fig. 15

CABINET AND ELECTRICAL PARTS LOCATION

Part No.	Figure
Ref No. 28	
XTW3+S8M	
XTW3+S16M	
XTW26+8F	
Ref No. 27	

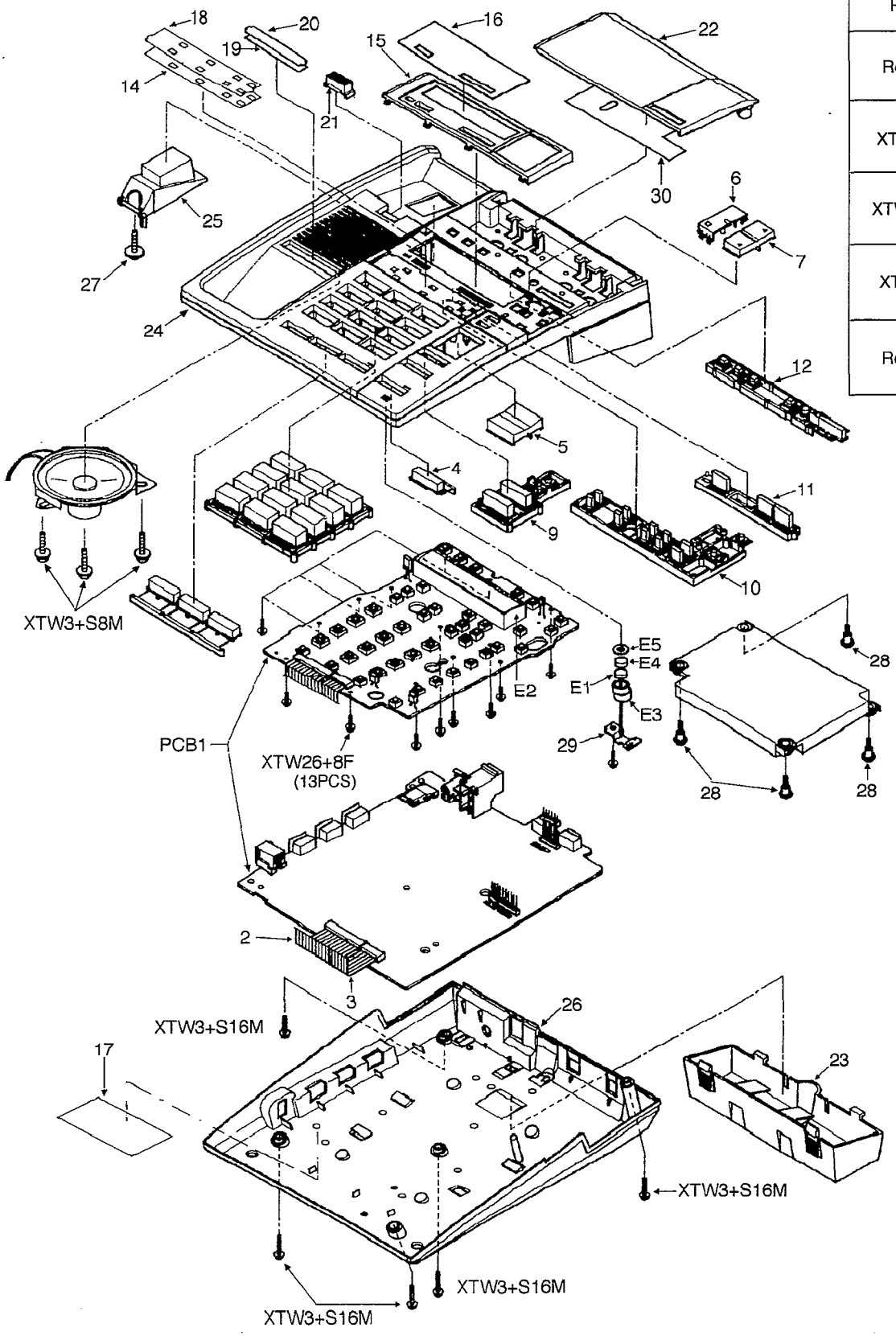


Fig. 16

EXTENSION CABLE CONNECTING METHOD

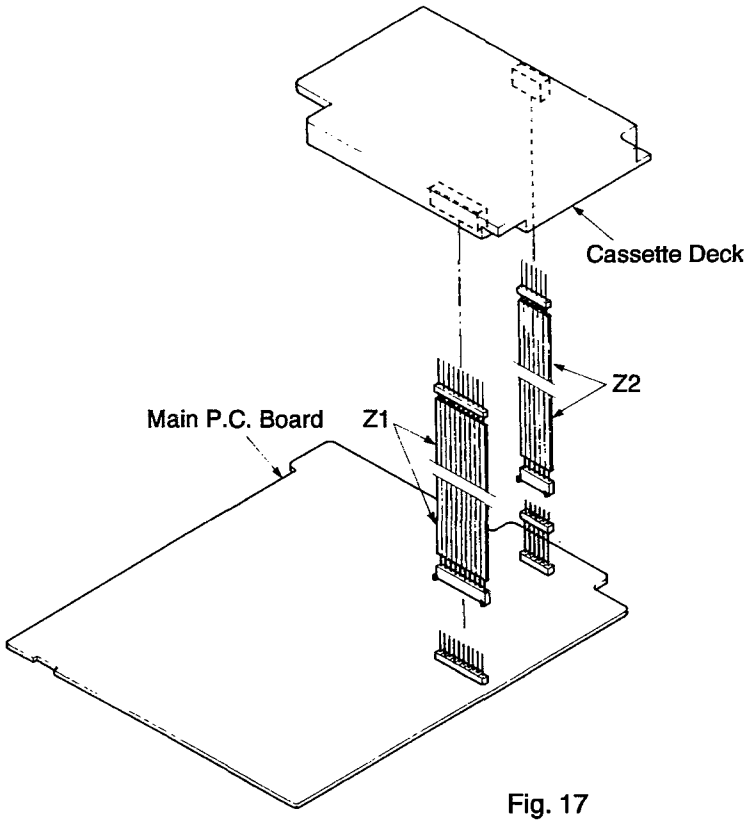
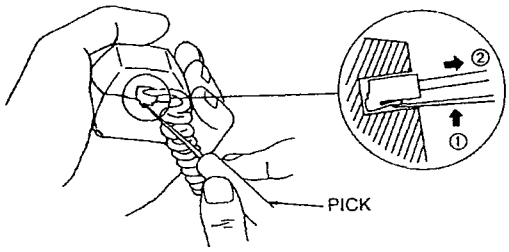


Fig. 17

REMOVAL OF THE HANDSET AND TELEPHONE CORDS



Remove the Handset Cord from the unit in the same way.

Fig. 18

ACCESSORIES AND PACKING MATERIALS

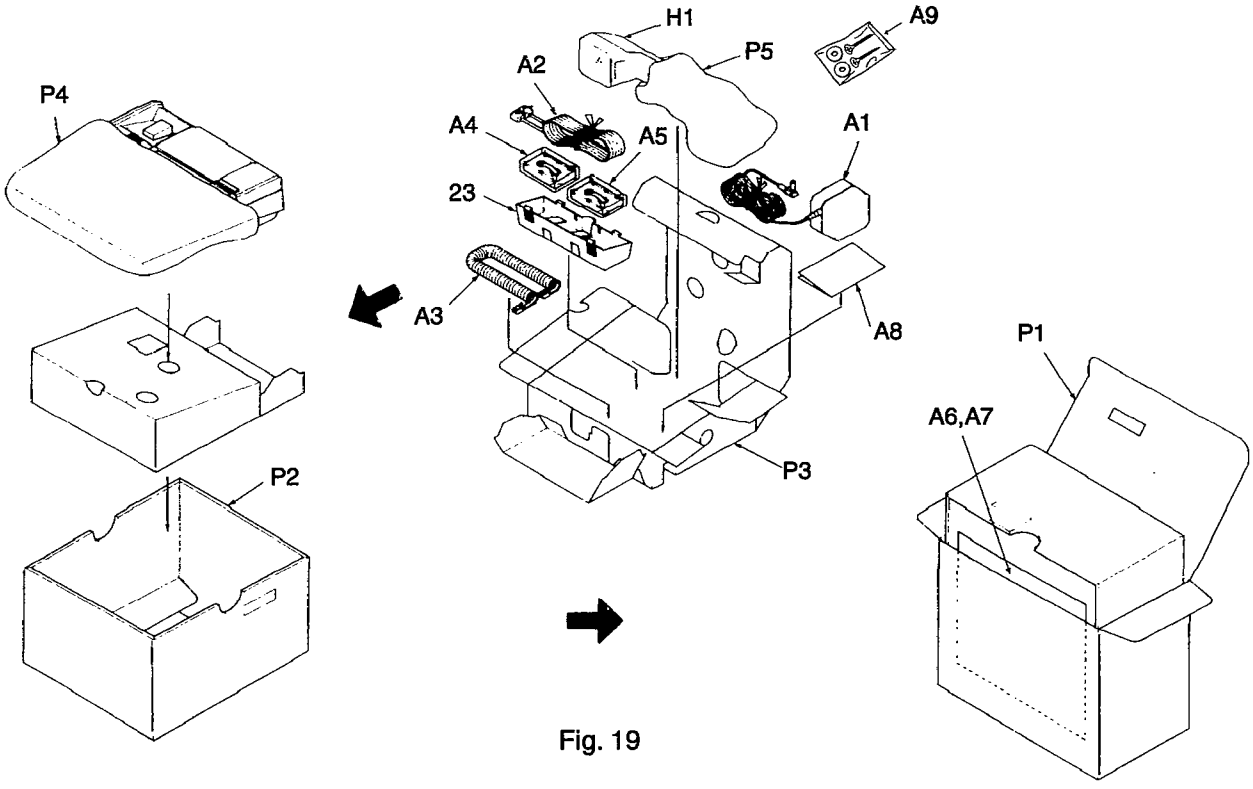


Fig. 19

REPLACEMENT PARTS LIST

Model KX-T2726E

1. RTL (Retention Time Limited)

Note: The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

2. Important safety notice.
Components identified by the ⚠ mark special characteristics important for safety. when replacing any of these components, use only manufacture's . specified parts.

3. The S mark indicates service standard parts and may differ from production parts.

4. RESISTORS & CAPACITORS
Unless otherwise specified.
All resistors are in ohms(Ω) k=l000Ω,M=l000kΩ
All capacitors are in MICRO FARADS(μF) P=μμF
*Type &Wattage of Resistor
Type

ERC:Solid	ERX:Metal Film	PQ4R:Carbon
ERD:Carbon	ERG:Metal Oxide	ERS:Fusible Resistor
PQRD:Carbon	ER0:Metal Film	ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage of Capacitor
Type

ECFD:Semi-Conductor	ECCD,ECKD,ECBT,PQCBC : Ceramic
ECQS:Styrol	ECQE,ECQV,ECQG : Polyster
PQCUV:Chip	ECEA,ECSZ : Electrolytic
ECQMS:Mica	ECQP : Polyproplylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		CASSETTE DECK PARTS	
M1	PQFMJD2200Z	MOTOR ASSEMBLY	1
M2	PQFB10002Z	ANGULAR BELT	2
M3	PQFD10009Z	LEAF SPRING	2
M4	PQFIJD2200X	PINCH LEVER ASSEMBLY	2
M5	Not Used		
M6	PQFN16Z	WASHER	2
M7	PQFN33Z	WASHER	2
M8	PQFN49Z	WASHER	2
M9	PQFP10001Z	PLUNGER	2
M10	PQFFJD2200X	FLYWHEEL ASSEMBLY	2
M11	PQFG1D2200Z	GEAR ARM ASSEMBLY	2
M12	PQFR1D2200Z	ICM TAKEUP REEL TABLE ASSEMBLY	1
M13	PQFR2D2200Z	ICM SUPPLY REEL TABLE ASSEMBLY	1
M14	PQFR3D2200Z	OGM TAKEUP REEL TABLE ASSEMBLY	1
M15	PQFR4D2200Z	OGM SUPPLY REEL TABLE ASSEMBLY	1
M16	PQFS10005Z	SPRING, BACK TENSION	4
M17	PQFS10007Z	SPRING, HEAD BASE	1
M18	PQFS10015Z	SPRING, OGM PINCH LEVER	1
M19	PQFS10019Z	SPRING, ICM PINCH LEVER	1
M20	PQFS73Z	SPRING, AZIMUTH	2
M21	PQFD1D2201Z	ICM HEAD BASE-A ASSEMBLY	1
M22	PQFD2D2200X	OGM HEAD BASE ASSEMBLY	1
M23	PQFCJD2200Z	MECHANISM CHASSIS ASSEMBLY	1
M24	PQFYJD2200Z	TRIGGER LEVER ASSEMBLY	2
M25	PQFG2D2200Y	OGM CAM GEAR ASSEMBLY	1
M26	PQFW10010Y	ERASE HEAD BASE	2
M27	PQHR321Y	INSULATOR	2
M28	PQJH1M2X	P/R HEAD	2
M29	PQJH6M2Y	ERASE HEAD	2
M30	PQJS10B32Z	CONNECTOR, 10 PIN	1
M31	PQJS6B30Z	CONNECTOR, 6 PIN	1
M32	PQJT10029Y	TERMINAL	2
M33	PQUP10064Z	P. C. BOARD, FLEXIBLE	1
M34	PQUP10065Y	P. C. BOARD, REED SWITCH	1
M35	PQHD10013Z	SCREW, PLUNGER	4
M36	PQHD15Z	SCREW, MOTOR	2
M37	XSN17+10FN-3	SCREW, AZIMUTH	2
M38	XSN17+4FN-3	SCREW, R/P HEAD	2
M39	XSN17+7FN-A	SCREW, ERASE HEAD	2
M40	XTW26+6F	SCREW, P. C. BOARD	2
M41	XUC15FY	RETAINING RING	2
M42	PQFI10001Z	CUSHION, CHASSIS	4
M43	PQFI14Z	CUSHION, PLUNGER and MOTOR	6
M44	PQFE10004Z	RUBBER, RING	2
M45	PQFS10020Z	SPRING	1
M46	PQFD10004Z	ICM HEAD BASE-B	1
M47	PQFD10014Y	SPRING	1
M48	PQFS10002Y	SPRING	1
M49	PQFS10013Y	SPRING	1
M50	PQFG3D2201Z	ICM CAM GRAR ASSEMBLY	1
M51	PQHX10222Z	INSULATOR	2
M52	PQHX10231Z	INSULATOR	1
M53	PQHX10232Z	INSULATOR	1
M54	PQHX10233Z	INSULATOR	1
S101	PQSE17Y	REED SWITCH (ICM)	1
S102	PQSE17Y	REED SWITCH (OGM)	1
S103	PQSH1A52X	SWITCH, POSITION (ICM)	1
S104	PQSH1A52X	SWITCH, POSITION (OGM)	1
		CABINET PARTS	
1	PQAS65P19Z	SPEAKER	1
2	PQJE10041Z	LEAD WIRE, 23 PIN	1
3	PQJE10056Z	LEAD WIRE, 10 PIN	1
4	PQBC10061Z1	BUTTON, SP-PHONE	1
5	PQBC10062Z1	BUTTON, VOLUME	1
6	PQBC10063Z1	BUTTON, STOP	1
7	PQBC10072Z1	BUTTON, ALL/NEW MESSAGE	1
8	PQBX10099Z1	BUTTON, RECALL, MUTE, HOLD	1
9	PQBX10100Z1	BUTTON, REDIAL, PAUSE	1
10	PQBX10101Z1	BUTTON, MEMORY STATION	1
11	PQBX10102Z1	BUTTON, FF, REW, MEMO/2WAY	1
12	PQBX10104Y1	BUTTON, ANSWER ON etc.	1
13	PQBX10212Z1	BUTTON, 12 KEY DIALING	1
14	PQGD10059Z	MEMORY CARD ⚠	1
15	PQGG10022Z1	GRILLE	1
16	PQGP10037Z1	PANEL	1
17	PQGT11129Z	NAME PLATE	1
18	PQGV10011Z	TRANSPARENT PLATE	1
19	PQHP532U	TELEPHONE NO. CARD	1
20	PQHR576Z	TRANSPARENT PLATE	1
21	PQKE46X7	HANDSET HANGER	1
22	PQKK10019X1	CASSETTE LID	1
23	PQKL13Y0	STAND	1
24	PQKM10060T1	UPPER CABINET	1
25	PQBH10010Y1	BUTTON, HOOK	1
26	PQYF10025S1	LOWER CABINET	1
27	PJHE5065Z	SCREW, HOOK SWITCH	1
28	PQHD10009Z	SCREW for DECK	4
29	PQMH10185Z	COVER	1
30	PQQT10814Z	INSTRUCTION LABEL	1

Ref. No.	Part No	Part Name & Description	Pcs/Set
		ACCESSORIES	
A1	KX-A11BEXE	AC ADAPTOR ⚠	1
A2	PQJA87T	TELEPHONE CORD ⚠	1
A3	PQJA212N	HANDSET CORD	1
A4	PQJN1M10AY	CASSETTE TAPE (10 minute)	1
A5	PQJN1M30AY	CASSETTE TAPE (30 minute)	1
A6	PQQW10752Z	QUICK REFERENCE GUIDE	1
A7	PQQX10807Z	INSTRUCTION BOOK ⚠	1
A8	PQQW10753Z	DIAL CARD	1
A9	PQZXXT2330M	WALL MOUNT KITS	1
H1	PQJX2PFAL15Z	HANDSET ASSEMBLY ⚠	1
		PACKING MATERIALS	
P1	PQPK10915Z	GIFT BOX	1
P2	PQPN10342Z	CUSHION	1
P3	PQPN10343Z	ACCESSORY BOX	1
P4	PQPH106Z	PROTECTION COVER (for Unit)	1
P5	PQPH75Z	PROTECTION COVER (for Handset)	1
		FIXTURES AND TOOLS	
Z1	PQJS11K3Z	EXTENSION CORD, 11 PIN	1
Z2	PQJS6K2Z	EXTENSION CORD, 6 PIN	1
Z3	PQZZLCT2401A	TEST TAPE	1

Note:

1. PQJS11K3Z and PQJS6K2Z are useful for servicing. (They make servicing easy.)
2. PQZZLCT2401A (or QZZMWA) are necessities for servicing.

Ref. No.	Part No	Part Name & Description		Pcs/Set
		PRINTED CIRCUIT BOARD PARTS		
PCB1	PQWPT2726E	MAIN P.C.BOARD ASSEMBLY(RTL)	⚠	1
		(ICS)		
IC1	PQVIBA8206	IC		1
IC2	PQVISC77655S	IC		1
IC3	PQVIUPC358C	IC	S	1
IC4	AN6658K	IC		1
IC5	PQVISC111812	IC		1
IC6	PQVICS11160N	IC		1
IC7	PQVI4678A32H	IC		1
IC301	PQVI4618B02F	IC		1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
		(TRANSISTORS)		
Q 1	2SA1625	TRANSISTOR(SI) [or 2SA1776Q or 2SA1776P or 2SB1488P or 2SB1488Q]		1
Q 2	PQVT2N6517CA	TRANSISTOR(SI)		1
Q 3	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q 4	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q 5	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q 6	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q 7	2SB1218A	TRANSISTOR(SI) [or 2SA1603S or 2SA1576S]		1
Q 8	PQVTKSD261CY	TRANSISTOR(SI)		1
Q 9	PQVTFB1J3P	TRANSISTOR(SI)		1
Q10	UN5213	TRANSISTOR(SI)	S	1
Q11	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q14	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q15	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q16	2SD1819A	TRANSISTOR(SI)		1
Q17	PQVTFB1J3P	TRANSISTOR(SI)		1
Q18	UN5213	TRANSISTOR(SI)	S	1
Q19	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q20	2SC1740S	TRANSISTOR(SI) [or 2SC3311A or 2SC3330]		1
Q21	2SD2136	TRANSISTOR(SI)		1
Q22	PQVTKSD261CY	TRANSISTOR(SI)		1
Q23	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q24	2SB1218A	TRANSISTOR(SI) [or 2SA1603S or 2SA1576S]		1
Q33	2SC1740S	TRANSISTOR(SI) [or 2SC3311A or 2SC3330]		1
Q34	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q35	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q36	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q37	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q38	PQVTDTD123K	TRANSISTOR(SI)		1
Q39	PQVTFB1J3P	TRANSISTOR(SI)		1
Q40	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q41	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q42	UN5213	TRANSISTOR(SI)	S	1
Q43	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q44	PQVTFB1J3P	TRANSISTOR(SI)		1
Q45	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q301	2SB1218A	TRANSISTOR(SI) [or 2SA1603S or 2SA1576S]		1
Q302	2SD1819A	TRANSISTOR(SI) [or 2SC4081S or 2SC4155S]		1
Q303	2SB1218A	TRANSISTOR(SI) [or 2SA1603S or 2SA1576S]		1
Q304	2SB1218A	TRANSISTOR(SI) [or 2SA1603S or 2SA1576S]		1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
		(DIODES)		
D 1	1SS119	DIODE(SI)	S	1
D 2	1SS119	DIODE(SI)	S	1
D 3	1SS119	DIODE(SI)	S	1
D 4	1SS119	DIODE(SI)	S	1
D 5	MA4360	DIODE(SI)		1
D 6	PQVDS1YB40F1	DIODE(SI)		1
D 7	PQVDS1ZB40F1	DIODE(SI)		1
D 8	MA4033	DIODE(SI)		1
D 9	1SS119	DIODE(SI)	S	1
D11	MA4047	DIODE(SI)		1
D12	PQVDMTZ6R8	DIODE(SI)		1
D13	MA4180	DIODE(SI)	S	1
D14	MA4039	DIODE(SI)		1
D15	MA700A	DIODE(SI)		1
D16	MA700A	DIODE(SI)		1
D17	1SS119	DIODE(SI)	S	1
D18	1SS119	DIODE(SI)	S	1
D19	1S2076	DIODE(SI)		1
D20	1SS119	DIODE(SI)	S	1
D23	PQVDS5688G	DIODE(SI)	S	1
D24	PQVDMTZ6R8	DIODE(SI)		1
D25	1S2076	DIODE(SI)		1
D27	MA4051	DIODE(SI)		1
D32	1SS119	DIODE(SI)	S	1
D33	1SS119	DIODE(SI)	S	1
D34	1SS119	DIODE(SI)	S	1
D35	1SS119	DIODE(SI)	S	1
D37	1SS119	DIODE(SI)	S	1
D38	MA700A	DIODE(SI)		1
D41	1SS119	DIODE(SI)	S	1
D42	1SS119	DIODE(SI)	S	1
D43	PQVDMTZ5R1	DIODE(SI)		1
D44	1S2076	DIODE(SI)		1
D45	1SS119	DIODE(SI)	S	1
D46	PQVDMTZ5R1	DIODE(SI)		1
D47	1SS119	DIODE(SI)	S	1
D48	RLS71	DIODE(SI)		1
D49	MA4110	DIODE(SI)		1
D50	1S2076	DIODE(SI)		1
D51	PQVDRB751H4	DIODE(SI)		1
D301	MA4047	DIODE(SI)		1
D302	1SS119	DIODE(SI)	S	1
D303	RLS71	DIODE(SI)		1
D304	1SS119	DIODE(SI)	S	1
D310	MA8030M	DIODE(SI)		1
LED1	LN268RPXTAB	LED		1
LED2	LN268RPXTAB	LED		1
LED3	LN260RPX	LED		1
LED4	PQVDSLZ255B1	LED		1
		(JACKS)		
JJ1	PQJJ2HB2Z	JACK, DC IN, TELEPHONE LINE		1
JJ2	PQJJ1TB18Z	JACK, HANDSET		1

Ref. No.	Part No.	Part Name & Description	Pcs/Set
		(CONNECTORS)	
CN1	PQJP10A39Z	CONNECTOR, 10 PIN	1
CN2	PQJP06A38Z	CONNECTOR, 6 PN	1
CN3	PQJS23A19Z	CONNECTOR SOCKET, 23 PN	1
CN4	PQJS10A19Z	CONNECTOR SOCKET, 10 PN	1
CN5	PQJS23A19Z	CONNECTOR SOCKET, 23 PN	1
CN6	PQJS10A19Z	CONNECTOR SOCKET, 10 PN	1
		(SWITCHES)	
SW1	ESE14A211	SWITCH, HOOK	1
SW2	PQSS2B18Z	SWITCH, RECALL	1
SW3	PQSS3A17Z	SWITCH, RINGER	1
SW4	PQSS2A27Z	SWITCH, DIALING MODE	1
SW6	PQSS2A27Z	SWITCH, MESSAGE ALERT	1
SW7	PQSS3A17Z	SWITCH, REC TIME	1
S 1	EVQ21005G	SWITCH, REMOTE CODE	1
S 2	EVQ21005G	SWITCH, MERCURY	1
S 3	EVQ21005G	SWITCH, RECALL	1
S 4	EVQ21005G	SWITCH, REDIAL	1
S 5	EVQ21005G	SWITCH, PAUSE	1
S 6	EVQ21005G	SWITCH, MUTE	1
S 7	EVQQJJ05Q	SWITCH, DIALING "3"	1
S 8	EVQQJJ05Q	SWITCH, DIALING "6"	1
S 9	EVQQJJ05Q	SWITCH, DIALING "9"	1
S10	EVQQJJ05Q	SWITCH, DIALING "#"	1
S11	EVQ21005G	SWITCH, VOLUME DOWN	1
S12	EVQQJJ05Q	SWITCH, DIALING "2"	1
S13	EVQQJJ05Q	SWITCH, DIALING "5"	1
S14	EVQQJJ05Q	SWITCH, DIALING "8"	1
S15	EVQQJJ05Q	SWITCH, DIALING "0"	1
S16	EVQ21005G	SWITCH, VOLUME UP	1
S17	EVQQJJ05Q	SWITCH, DIALING "1"	1
S18	EVQQJJ05Q	SWITCH, DIALING "4"	1
S19	EVQQJJ05Q	SWITCH, DIALING "7"	1
S20	EVQQJJ05Q	SWITCH, DIALING "*"	1
S21	EVQ21005G	SWITCH, SP-PHONE	1
S22	EVQ21005G	SWITCH, MEMORY STATION	1
S23	EVQ21005G	SWITCH, MEMORY STATION	1
S24	EVQ21005G	SWITCH, MEMORY STATION	1
S25	EVQ21005G	SWITCH, CLOCK	1
S26	EVQ21005G	SWITCH, HOLD	1
S27	EVQ21005G	SWITCH, MEMORY STATION	1
S28	EVQ21005G	SWITCH, MEMORY STATION	1
S29	EVQ21005G	SWITCH, MEMORY STATION	1
S31	EVQ21005G	SWITCH, GREETING PLAY	1
S32	EVQ21005G	SWITCH, GREETING RECORD	1
S33	EVQ21005G	SWITCH, GREETING SELECT	1
S34	EVQ21005G	SWITCH, ICM ERASE	1
S35	EVQ21005G	SWITCH, ALL MESSAGE	1
S36	EVQ21005G	SWITCH, NEW MESSAGE	1
S37	EVQ21005G	SWITCH, ANSWER ON	1
S38	EVQ21005G	SWITCH, STOP	1
S39	EVQ21005G	SWITCH, MEMO/2WAY	1
S40	EVQ21005G	SWITCH, FF	1
S41	EVQ21005G	SWITCH, REW	1
S43	EVQ21005G	SWITCH, LOWER	1
S44	EVQ21005G	SWITCH, PROGRAM	1

Ref. No.	Part No.	Part Name & Description		Pcs/Set
		(PHOTO COUPLERS)		
PC1	PQVIPC817K	PHOTO ELECTRIC TRANSDUCER	S ⚠	1
PC2	PQVIPC817K	PHOTO ELECTRIC TRANSDUCER	S ⚠	1
PC3	PQVIPC817K	PHOTO ELECTRIC TRANSDUCER	S ⚠	1
PC4	PQVIPC817K	PHOTO ELECTRIC TRANSDUCER	S ⚠	1
PC5	PQVIPC400	PHOTO ELECTRIC TRANSDUCER	⚠	1
PC6	PQVIPC400	PHOTO ELECTRIC TRANSDUCER	⚠	1
PC7	PQVIPC400	PHOTO ELECTRIC TRANSDUCER	⚠	1
		(VARIABLE RESISTORS)		
VR1	EVNDXAA03B23	VARIABLE RESISTOR, 2kΩ		1
VR2	EVNDXAA03B24	VARIABLE RESISTOR, 20kΩ		1
VR3	EVNDXAA03B54	VARIABLE RESISTOR, 50kΩ		1
VR4	EVNDXAA03B52	VARIABLE RESISTOR, 500Ω		1
		(OTHERS)		
SA1	PQVDRA311PT2	VARISTOR		1
T1	PQLT8F8A	TRANSFORMER	⚠	1
T2	PQLT9Z8A	TRANSFORMER	⚠	1
T3	PQLT2E2A	TRANSFORMER	⚠	1
X1	PQVBT4.0G2	CERAMIC FILTER	S	1
X2	PQVBT7.68T1	CERAMIC FILTER	S	1
X301	PQVBB800J1	CERAMIC FILTER		1
X302	PQVCL3276N6Z	CRYSTAL OSCILLATOR		1
LCD1	PQADDLC2967P	LIQUID CRYSTAL DISPLAY		1
E1	PQJM122Z	MICROPHONE		1
E2	PQHR10132Z	LCD HOLDER		1
E3	PQMG10011Z	RUBBER, MICROPHONE COVER		1
E4	PQHR10319Z	SPACER, MICROPHONE		1
E5	PQHG10077Z	RUBBER, SHEET		1
		(RESISTORS)		
R 1	ERDS1TJ102	1K		1
R 2	PQ4R10XJ123	12K		1
R 3	PQ4R10XJ334	330K		1
R 4	PQ4R10XJ473	47K		1
R 5	PQ4R10XJ392	3.9K		1
R 6	PQ4R10XJ473	47K		1
R 7	PQ4R10XJ331	330		1
R 8	PQ4R10XJ154	150K		1
R 9	PQ4R10XJ224	220K		1
R10	PQ4R10XJ473	47K		1
R11	PQ4R10XJ473	47K		1
R12	PQ4R10XJ124	120K		1
R13	ERDS1TJ101	100		1
R14	PQ4R10XJ472	4.7K		1
R15	PQ4R10XJ104	100K		1
R16	PQ4R10XJ472	4.7K		1
R17	PQ4R10XJ473	47K		1

Ref. No.	Part No.	Value	Pcs/Set
R18	PQ4R10XJ822	8.2K	1
R19	PQ4R10XJ682	6.8K	1
R20	ERDS2TJ104	100K	1
R21	PQ4R10XJ222	2.2K	1
R22	PQ4R10XJ153	15K	1
R23	PQ4R10XJ104	100K	1
R24	PQ4R10XJ104	100K	1
R25	PQ4R10XJ222	2.2K	1
R26	PQ4R10XJ123	12K	1
R27	PQ4R10XJ103	10K	1
R28	PQ4R10XJ332	3.3K	1
R29	ERDS1TJ220	22	1
R30	PQ4R10XJ332	3.3K	1
R31	PQ4R10XJ331	330	1
R32	PQ4R10XJ392	3.9K	1
R33	PQ4R10XJ222	2.2K	1
R34	ERDS2TJ4R7	4.7	1
R35	ERDS2TJ182	1.8K	1
R36	ERDS2TJ392	3.9K	1
R37	PQ4R10XJ121	120	1
R38	ERDS2TJ6R8	6.8	1
R39	PQ4R10XJ822	8.2K	1
R40	PQ4R10XJ104	100K	1
R41	PQ4R10XJ273	27K	1
R42	PQ4R10XJ225	2.2M	1
R43	PQ4R10XJ220	22	1
R44	PQ4R10XJ272	2.7K	1
R45	PQ4R10XJ472	4.7K	1
R46	Not Used		
R47	Not Used		
R48	PQ4R10XJ224	220K	1
R51	PQ4R10XJ125	1.2M	1
R52	PQ4R10XJ274	270K	1
R53	PQ4R10XJ561	560	1
R54	Not Used		
R55	PQ4R10XJ222	2.2K	1
R56	PQ4R18XJ472	4.7K	1
R57	PQ4R10XJ560	56	1
R58	PQ4R10XJ335	3.3M	1
R59	PQ4R10XJ103	10K	1
R62	PQ4R10XJ223	22K	1
R63	PQ4R10XJ273	27K	1
R64	Not Used		
R65	PQ4R18XJ562	5.6K	1
R66	PQ4R10XJ222	2.2K	1
R67	PQ4R10XJ473	47K	1
R68	PQ4R10XJ104	100K	1
R69	PQ4R10XJ220	22	1
R70	PQ4R10XJ104	100K	1
R71	PQ4R10XJ103	10K	1
R72	PQ4R10XJ225	2.2M	1
R73	PQ4R10XJ303	30K	1
R74	PQ4R10XJ683	68K	1
R75	PQ4R10XJ182	1.8K	1
R76	PQ4R10XJ562	5.6K	1
R77	PQ4R10XJ275	2.7M	1
R78	PQ4R10XJ472	4.7K	1
R79	PQ4R10XJ183	18K	1
R80	PQ4R10XJ222	2.2K	1
R81	PQ4R10XJ104	100K	1
R82	PQ4R18XJ472	4.7K	1
R83	PQ4R10XJ473	47K	1
R84	PQ4R10XJ683	68K	1
R85	PQ4R10XJ183	18K	1

Ref. No.	Part No.	Value	Pcs/Set
R86	PQ4R10XJ103	10K	1
R87	Not Used		
R88	PQ4R10XJ472	4.7K	1
R89	PQ4R10XJ564	560K	1
R90	PQ4R10XJ680	68	1
R91	PQ4R18XJ822	8.2K	1
R92	Not Used		
R93	Not Used		
R94	PQ4R10XJ332	3.3K	1
R95	PQ4R10XJ125	1.2M	1
R96	PQ4R10XJ101	100	1
R97	PQ4R10XJ681	680	1
R98	PQ4R18XJ102	1K	1
R99	PQ4R10XJ124	120K	1
R100	PQ4R10XJ680	68	1
R101	PQRQ1VJ4R7	4.7	1
R102	Not Used		
R103	Not Used		
R104	Not Used		
R105	PQ4R10XJ474	470K	1
R106	PQ4R10XJ105	1M	1
R107	PQ4R10XJ474	470K	1
R108	PQ4R10XJ474	470K	1
R109	PQ4R10XJ474	470K	1
R110	ERDS1TJ100	10	1
R111	PQ4R10XJ681	680	1
R112	PQ4R10XJ822	8.2K	1
R113	PQ4R10XJ562	5.6K	1
R114	PQ4R10XJ2R4	2.4	1
R115	Not Used		
R116	Not Used		
R117	PQ4R10XJ563	56K	1
R118	PQ4R10XJ104	100K	1
R120	ERDS1TJ391	390	1
R121	PQ4R18XJ221	220	1
R122	PQ4R10XJ393	39K	1
R131	PQ4R10XJ223	22K	1
R132	ERD25TJ223	22K	1
R133	PQ4R10XJ223	22K	1
R134	PQ4R10XJ223	22K	1
R135	PQ4R18XJ683	68K	1
R136	PQ4R10XJ224	220K	1
R137	PQ4R10XJ104	100K	1
R138	PQ4R10XJ104	100K	1
R139	PQ4R10XJ333	33K	1
R140	PQ4R18XJ393	39K	1
R141	PQ4R18XJ393	39K	1
R142	Not Used		
R143	Not Used		
R144	PQ4R10XJ334	330K	1
R145	Not Used		
R146	PQ4R10XJ393	39K	1
R147	PQ4R10XJ333	33K	1
R148	PQ4R10XJ822	8.2K	1
R149	PQ4R18XJ333	33K	1
R150	PQ4R18XJ333	33K	1
R151	PQ4R10XJ223	22K	1
R152	PQ4R10XJ392	3.9K	1
R153	PQ4R10XJ223	22K	1
R154	PQ4R10XJ334	330K	1
R155	PQ4R10XJ221	220	1
R156	PQ4R10XJ223	22K	1
R157	PQ4R10XJ103	10K	1
R158	PQ4R10XJ562	5.6K	1

Ref. No.	Part No.	Value	Pcs/Set
R159	PQ4R10XJ105	1M	1
R160	PQ4R10XJ471	470	1
R161	PQ4R18XJ563	56K	1
R162	PQ4R10XJ133	13K	1
R163	PQ4R10XJ103	10K	1
R164	PQ4R10XJ752	7.5K	1
R165	PQ4R10XJ332	3.3K	1
R166	PQ4R10XJ682	6.8K	1
R167	Not Used		
R168	PQ4R10XJ121	120	1
R169	PQ4R10XJ394	390K	1
R170	PQ4R10XJ223	22K	1
R171	Not Used		
R172	Not Used		
R173	PQ4R10XJ220	22	1
R174	PQ4R10XJ104	100K	1
R175	PQ4R10XJ104	100K	1
R176	PQ4R10XJ104	100K	1
R177	PQ4R10XJ105	1M	1
R178	Not Used		
R179	PQ4R10XJ105	1M	1
R180	PQ4R10XJ683	68K	1
R181	PQ4R10XJ334	330K	1
R182	PQ4R10XJ562	5.6K	1
R183	PQ4R10XJ224	220K	1
R184	Not Used		
R185	PQ4R10XJ331	330	1
R186	PQ4R10XJ681	680	1
R187	PQ4R10XJ103	10K	1
R188	PQ4R10XJ393	39K	1
R190	PQ4R10XJ334	330K	1
R191	PQ4R10XJ153	15K	1
R192	PQ4R10XJ102	1K	1
R193	PQ4R10XJ102	1K	1
R194	PQ4R10XJ102	1K	1
R195	PQ4R10XJ104	100K	1
R196	PQ4R10XJ100	10	1
R197	PQ4R10XJ335	3.3M	1
R198	PQ4R10XJ102	1K	1
R199	PQ4R10XJ102	1K	1
R200	PQ4R10XJ102	1K	1
R201	PQ4R10XJ102	1K	1
R202	PQ4R18XJ563	56K	1
R203	PQ4R10XJ473	47K	1
R204	Not Used		
R205	PQ4R10XJ825	8.2M	1
R206	PQ4R10XJ104	100K	1
R207	PQ4R10XJ393	39K	1
R208	PQ4R10XJ103	10K	1
R209	PQ4R10XJ334	330K	1
R210	PQ4R10XJ684	680K	1
R211	Not Used		
R212	ERDS2TJ101	100	1
R213	PQ4R10XJ103	10K	1
R214	PQ4R10XJ183	18K	1
R215	PQ4R10XJ562	5.6K	1
R216	PQ4R10XJ103	10K	1
R217	PQ4R10XJ392	3.9K	1
R218	PQ4R10XJ394	390K	1
R219	PQ4R10XJ224	220K	1
R220	PQ4R10XJ472	4.7K	1
R221	PQ4R10XJ563	56K	1
R222	PQ4R10XJ393	39K	1
R223	Not Used		

Ref. No.	Part No.	Value	Pcs/Set
R224	PQ4R10XJ562	5.6K	1
R225	PQ4R10XJ102	1K	1
R226	PQ4R18XJ332	3.3K	1
R227	PQ4R10XJ104	100K	1
R228	PQ4R18XJ303	30K	1
R229	ERC14GM226	22M	1
R230	PQ4R10XJ273	27K	1
R231	PQ4R10XJ104	100K	1
R232	PQ4R10XJ562	5.6K	1
R233	PQ4R18XJ271	270	1
R234	PQ4R18XJ104	100K	1
R235	PQ4R18XJ203	20K	1
R236	PQ4R10XJ224	220K	1
R237	PQ4R10XJ275	2.7M	1
R238	PQ4R10XJ681	680	1
R239	PQ4R18XJ120	12	1
R240	PQ4R10XJ183	18K	1
R241	PQ4R10XJ823	82K	1
R242	PQ4R10XJ474	470K	1
R243	PQ4R10XJ101	100	1
R244	PQ4R10XJ222	2.2K	1
R245	PQ4R10XJ183	18K	1
R246	PQ4R10XJ822	8.2K	1
R247	PQ4R10XJ822	8.2K	1
R301	PQ4R10XJ473	47K	1
R302	PQ4R10XJ473	47K	1
R303	PQ4R10XJ473	47K	1
R304	PQ4R10XJ102	1K	1
R306	PQ4R10XJ105	1M	1
R307	PQ4R10XJ224	220K	1
R308	PQ4R10XJ335	3.3M	1
R309	PQ4R10XJ334	330K	1
R310	PQ4R10XJ105	1M	1
R311	PQ4R10XJ474	470K	1
R312	PQ4R10XJ224	220K	1
R313	PQ4R10XJ474	470K	1
R314	PQ4R10XJ101	100	1
R315	PQ4R18XJ104	100K	1
R316	PQ4R10XJ105	1M	1
R317	PQ4R10XJ105	1M	1
R318	PQ4R18XJ394	390K	1
R319	PQ4R10XJ102	1K	1
R320	PQ4R10XJ473	47K	1
R321	PQ4R10XJ103	10K	1
R322	PQ4R10XJ103	10K	1
J1~5, 7, 8, 10	PQ4R10XJ000	0Ω	8
J50, 51, J53~55, J133, J148, J653, J665	PQ4R18XJ000	0Ω	9

Ref. No.	Part No.	Value	Pcs/Set
		(CAPACITORS)	
C 2	ECEA1HKS100	10	1
C 3	ECEA1HKSR22	0.22	1
C 4	PQCUV1H822KB	0.0082	1
C 5	PQCUV1H103KB	0.01	1
C 6	ECKD2H681KB	680P	1
C 7	ECKD2H681KB	680P	1
C 8	ECEA1CU221	220	1
C 9	ECEA1HKS010	1	1
C10	ECEA1CKS100	10	1
C11	ECEA1CKS100	10	1
C12	ECQM1H154JV	0.15	1
C13	ECEA1EU470	47	1
C14	ECQM1H683JV	0.068	1
C15	ECEA1HKS4R7	4.7	1
C16	ECEA1AU221	220	1
C17	PQCUV1C683MD	0.068	1
C18	PQCUV1C683MD	0.068	1
C19	PQCUV1H102J	0.001	1
C20	ECUV1H103KB	0.01	1
C21	PQCUV1E153MD	0.015	1
C22	ECEA1CKS100	10	1
C23	PQCUV1H103KB	0.01	1
C24	PQCUV1E333MD	0.033	1
C25	PQCUV1H103KB	0.01	1
C26	PQCUV1E104MD	0.1	1
C27	Not Used		
C28	PQCUV1H222KB	0.0022	1
C29	ECEA1HKS010	1	1
C30	PQCUV1C683MD	0.068	1
C31	PQCUV1E333MD	0.033	1
C32	EECS5R5T224	0.22	1
C33	PQCUV1H151JC	150P	1
C34	PQCUV1E104MD	0.1	1
C35	Not Used		
C36	Not Used		
C37	PQCUV1H101JC	100P	1
C38	PQCUV1H102J	0.001	1
C39	ECEA1CKS470	47	1
C40	PQCUV1E153MD	0.015	1
C41	PQCUV1H392KB	0.0039	1
C42	PQCUV1C683MD	0.068	1
C43	ECEA1HKS010	1	1
C44	PQCUV1H103KB	0.01	1
C45	PQCUV1C683MD	0.068	1
C46	ECEA1HKS010	1	1
C47	ECEA1HKS4R7	4.7	1
C48	PQCUV1C683MD	0.068	1
C49	ECEA0JKS220	22	1
C50	ECEA1HKS4R7	4.7	1
C51	PQCUV1H562KB	0.0056	1
C52	ECEA1AU101	100	1
C53	PQCUV1E104MD	0.1	1
C54	PQCUV1H223KB	0.022	1
C55	ECEA1AU101	100	1
C56	ECEA0JU331	330	1
C57	ECEA1HKS0R1	0.1	1
C58	ECEA1CKS100	10	1
C59	PQCUV1E104MD	0.1	1
C60	PQCUV1H102J	0.001	1
C61	ECEA1CKS470	47	1
C62	Not Used		
C63	Not Used		
C64	Not Used		
C65	ECEA1AU331	330	1

Ref. No.	Part No.	Value	Pcs/Set
C66	PQCUV1H103KB	0.01	1
C67	PQCUV1H103KB	0.01	1
C68	ECEA1AU101	100	1
C70	ECEA1CKS220	22	1
C71	ECEA0JU332	3300	1
C72	Not Used		
C73	Not Used		
C74	PQCUV1H103KB	0.01	1
C75	ECEA1CKS100	10	1
C76	PQCUV1H102J	0.001	1
C77	ECEA1CKS100	10	1
C78	PQCUV1H102J	0.001	1
C79	ECEA1CKS470	47	1
C80	PQCUV1H681JC	680P	1
C81	ECEA1AKS330	33	1
C82	PQCUV1H561JC	560P	1
C83	ECEA1CK101	100	1
C84	PQCUV1H103KB	0.01	1
C85	ECEA1CK101	100	1
C86	PQCUV1H103KB	0.01	1
C87	PQCUV1E104MD	0.1	1
C88	ECEA1CKS100	10	1
C89	PQCUV1H103KB	0.01	1
C90	ECEA1HKS0R1	0.1	1
C91	PQCUV1E153MD	0.015	1
C92	PQCUV1H103KB	0.01	1
C93	ECEA1HKSR47	0.47	1
C94	ECEA1HKS4R7	4.7	1
C95	PQCUV1H222KB	0.0022	1
C96	PQCUV1E153MD	0.015	1
C97	PQCUV1H472KB	0.0047	1
C98	ECEA1CKS470	47	1
C99	PQCUV1H152KB	0.0015	1
C100	PQCUV1E333MD	0.033	1
C101	ECEA1CKS220	22	1
C102	Not Used		
C103	PQCUV1H103KB	0.01	1
C104	ECEA1HKS0R1	0.1	1
C105	ECEA1CKS470	47	1
C107	PQCUV1H103KB	0.01	1
C108	PQCUV1H103KB	0.01	1
C109	PQCUV1E473MD	0.047	1
C106	Not Used		
C110	ECEA1HU220	22	1
C111	ECUV1H223MD	0.022	1
C112	PQCUV1H102J	0.001	1
C113	ECEA1CKS470	47	1
C114	Not Used		
C115	PQCUV1E104MD	0.1	1
C116	PQCUV1E104MD	0.1	1
C117	PQCUV1H103KB	0.01	1
C118	PQCUV1H103KB	0.01	1
C121	PQCUV1H102J	0.001	1
C122	PQCUV1H151JC	150P	1
C123	ECEA1CKS470	47	1
C124	PQCUV1H472KB	0.0047	1
C125	PQCUV1H222KB	0.0022	1
C126	PQCUV1E473MD	0.047	1
C127	ECEA1HKSR22	0.22	1
C128	ECEA1CKS100	10	1
C129	ECEA0JU102	1000	1
C130	PQCUV1E473MD	0.047	1
C131	ECEA1CK101	100	1
C132	PQCUV1H103KB	0.01	1

Ref. No.	Part No.	Value	Pcs/Set
C133	ECEA1CKS100	10	1
C134	ECEA1HKS0R1	0.1	1
C135	PQCUV1E104MD	0.1	1
C136	PQCUV1E104MD	0.1	1
C137	PQCUV1E104MD	0.1	1
C138	PQCUV1E104MD	0.1	1
C139	ECEA1HKS010	1	1
C140	ECEA1CKS220	22	1
C141	ECEA1CKS100	10	1
C142	PQCUV1C334ZF	0.33	1
C143	Not Used		
C144	PQCUV1C683MD	0.068	1
C145	PQCUV1C683MD	0.068	1
C146	PQCUV1H103KB	0.01	1
C147	PQCUV1H103KB	0.01	1
C148	PQCUV1E104MD	0.1	1
C150	PQCUV1E473MD	0.047	1
C151	PQCUV1E153MD	0.015	1
C152	PQCUV1H222KB	0.0022	1
C153	PQCUV1H103KB	0.01	1
C154	PQCUV1E153MD	0.015	1
C155	PQCUV1E153MD	0.015	1
C301	PQCUV1H103KB	0.01	1
C302	PQCUV1H103KB	0.01	1
C303	PQCUV1H103KB	0.01	1
C304	PQCUV1H223KB	0.022	1
C305	PQCUV1E473MD	0.047	1
C306	PQCUV1H102J	0.001	1
C307	PQCUV1H221JC	220P	1
C308	PQCUV1H221JC	220P	1
C309	PQCUV1H180JC	18P	1
C310	PQCUV1H150JC	15P	1
C311	PQCUV1H103KB	0.01	1

427

Y (F)
KXT2726E
Printed in JApan