

Service Manual

and Technical Guide

AUTO-LOGIC™

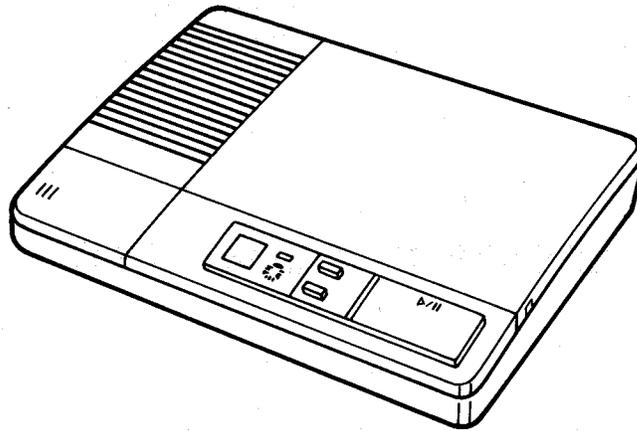
EASA-PHONE

AUTOMATIC TELEPHONE

ANSWERING SYSTEM

Telephone Equipment

KX-T1000



SPECIFICATIONS/ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ
DISASSEMBLY INSTRUCTIONS/ПОРЯДОК РАЗБОРКИ
CONNECTION/ПОДСОЕДИНЕНИЕ
CPU DATA/ИНФОРМАЦИЯ О ПРОЦЕССОРЕ
MEASUREMENT AND ADJUSTMENT METHOD/ИЗМЕРЕНИЯ И РЕГУЛИРОВКИ
IC BLOCK DIAGRAM/БЛОК-СХЕМА ИС
TERMINAL GUIDE OF IC's, TRANSISTORS AND DIODES/ЦОКОЛЕВКА
ИНТЕГРАЛЬНЫХ СХЕМ, ТРАНЗИСТОРОВ И ДИОДОВ
SCHEMATIC DIAGRAM/ПРИНЦИПИАЛЬНАЯ СХЕМА
BLOCK DIAGRAM/БЛОК-СХЕМА
TROUBLESHOOTING GUIDE/НЕИСПРАВНОСТИ И МЕТОДЫ ИХ УСТРАНЕНИЯ
ACCESSORIES AND PACKING MATERIALS/ПРИНАДЛЕЖНОСТИ И
УПАКОВОЧНЫЕ МАТЕРИАЛЫ
EXTENSION CORD CONNECTING METHOD/ПОДКЛЮЧЕНИЕ СЕРВИСНОГО
КАБЕЛЯ
CASSETTE DECK PARTS LOCATION/РАСПОЛОЖЕНИЕ ЧАСТЕЙ КАСЕТНОГО
МЕХАНИЗМА
CABINET AND ELECTRICAL PARTS LOCATION/РАСПОЛОЖЕНИЕ ЧАСТЕЙ
КОРПУСА И ЭЛЕКТРИЧЕСКИХ ЧАСТЕЙ
REPLACEMENT PARTS LIST/СПИСОК ЗАПАСНЫХ ЧАСТЕЙ

Panasonic

Matsushita Services Company
Division of Matsushita Electric
Corporation of America
50 Meadowland Parkway,
Secaucus, New Jersey 07094

Matsushita Electric
of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Panasonic Sales Company,
Division of Matsushita Electric
of Puerto Rico, Inc.
San Gabriel Industrial Park
65th Infantry Ave. Km.9.5
Carolina, Puerto Rico 00630

■ SPECIFICATIONS

Power Source:	AC adaptor (12 V, DC), KX-A11-W
Outgoing Message (OGM):	Recorded on a microchip.
Incoming Message (ICM):	Recording Time is up to 30 seconds.
Tape Deck:	Micro Cassette (MC-30)
Ring Control:	(1 MIN/VOX)
Call Counter:	Logic control dual cassette system
Monitor Speaker:	5/Auto
Microphone:	1-digit LED display, up to 9 calls
Connection:	350 mW max. across the monitor speaker
Dimensions:	5 cm (1 ³ / ₃₂ ") PM dynamic (8 ohms)
Weight:	Condenser microphone
	2 built-in modular jacks, DC-IN jack
	5 ⁵ / ₃₂ " × 1 ²³ / ₃₂ " × 6 ³¹ / ₃₂ "
	[131 (W) × 44 (H) × 177 (D) mm]
	1 lb 1.93 oz (480 g) with cassette tape

Design and specifications are subject to change without notice.

DISASSEMBLY INSTRUCTIONS

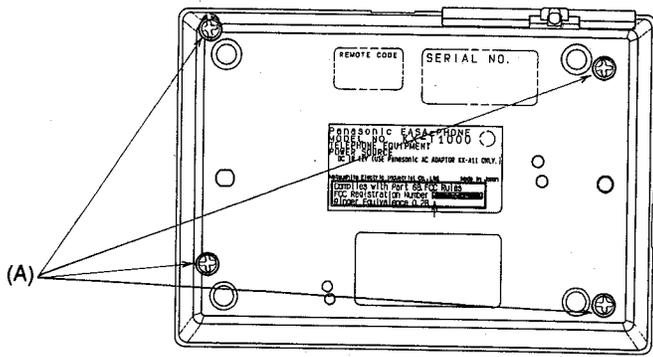


Fig. 2

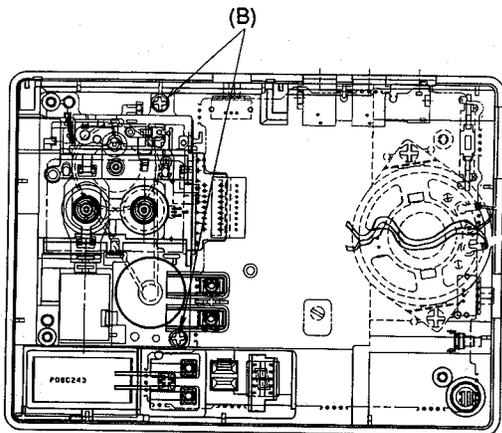


Fig. 3

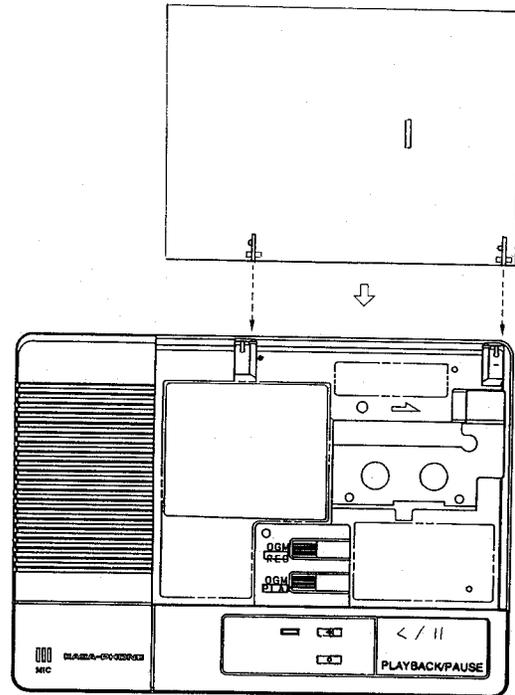
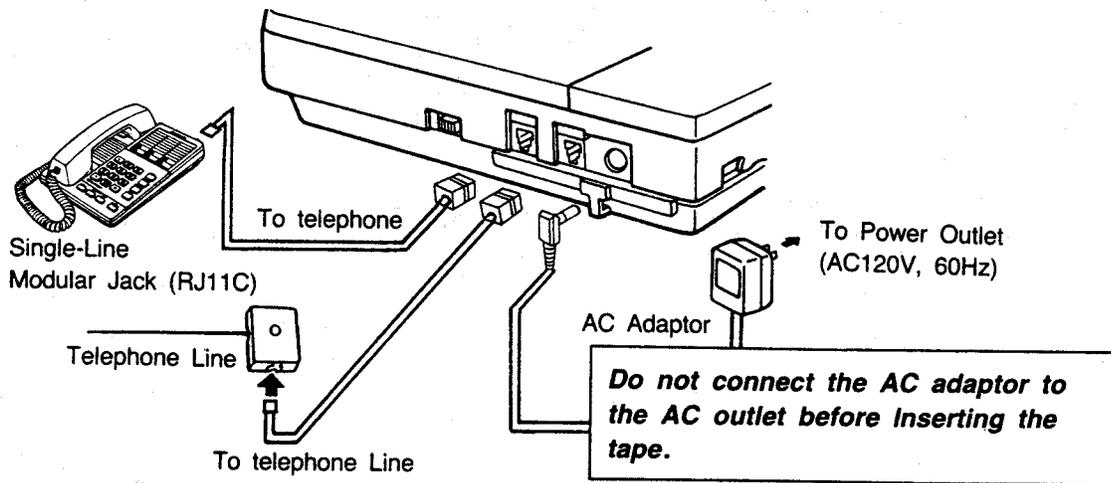


Fig. 4

Procedure	To remove—	Remove—	Shown in Fig.—
1	Lower Cabinet	Screws (3×20) (A)×4	2
2	Main Printed Circuit Board and Cassette Deck	Screw (3×10) (B)×2	3
3	Cassette Lid	Remove the Cassette Lid.	4

CONNECTION

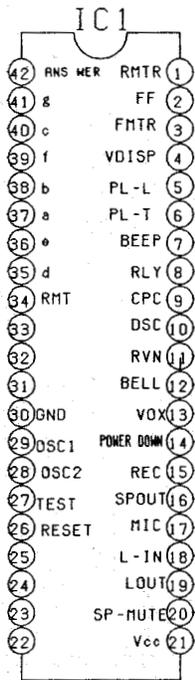


CPU DATA

Part No: PQVI4148SA59

Program ROM: 4K x 10 bit

Power Supply Voltage: 4-6 V



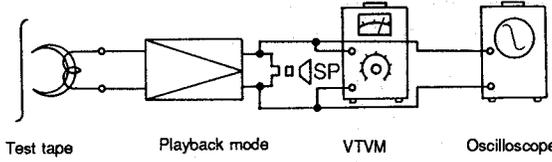
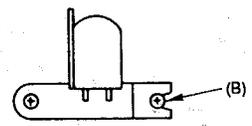
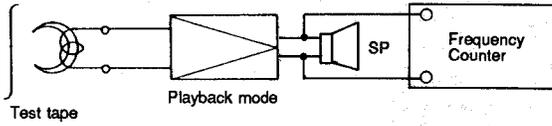
OPTION

	No.	Open	Short
VOX	A	6 sec	4 sec
REMOTE	B	O	X
CALL COUNTER	C	O	X
TEST	D	Normal	Test

Pin No.	Function	High	Low	Pin No.	Function	High	Low
1	RMTR	Active	GND	22	Key in	Reset	Normal
2	FF			23	Key in		
3	FMTR	Active	GND	24	Key in	Vcc	Key in
4	V disp			25	Key in		
5	PLL	Active	GND	26	Reset	Normal	Active
6	PLT			27	TEST		
7	BEEP	Active	GND	28	OSC1	Key in	Key in
8	RLY			29	OSC2		
9	CPC	CPC in	DSC in	30	GND	GND	Key in
10	DSC			31	Key in		
11	RVN	Bell in	Power down	32	Key in	Normal	Active
12	BELL			33	Strobe Out		
13	Vox	Disable	Power down	34	Remote	Remote	Remote
14	Power Down			35	7-seg d		
15	REC	Active	GND	36	7-seg e	ON	OFF
16	SP out/ Play			37	7-seg a		
17	Mic	Active	GND	38	7-seg b	ON	OFF
18	Line in			39	7-seg f		
19	Line out	4~6V	GND	40	7-seg c	ON	OFF
20	SP Mute			41	7-seg g		
21	Vcc	4~6V	GND	42	Answer -LED	ON	OFF

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: $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)
 4. Test equipments are not treated as replacement parts.

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
1. Head azimuth adjustment	1. Play back test tape (QZZMWA). 2. Adjust screw (B) shown in fig. B for maximum output at SP terminal. (Test equipment connection is shown below.)  <p style="text-align: center;">Fig. A</p>	*Record/playback head  <p style="text-align: center;">Fig. B</p>
2. Tape speed adjustment	1. Play back test tape (QZZMWA). 2. Adjust VR4 for 2990 ± 10 Hz on frequency counter reading.  <p style="text-align: center;">Fig. C</p>	

PLL Adjustment

① fH Adjustment

1. Connect IC5 ③ pin and ⑦ pin, with a capacitor ($10 \mu\text{F}$).
2. Connect the frequency counter and oscilloscope.
 ⊕ side...IC5 ⑤ pin
 ⊖ side...IC5 ⑦ pin
3. Adjust VR2 for $f_H \pm 7$ Hz on the frequency counter reading
 (Refer to below table).

Label No.
(Bottom of the cradle)

Code	fH (Hz)
1	1209
2	Not Used
3	1477
4	1209
5	Not Used
6	1477
7	1209
8	Not Used
9	1477

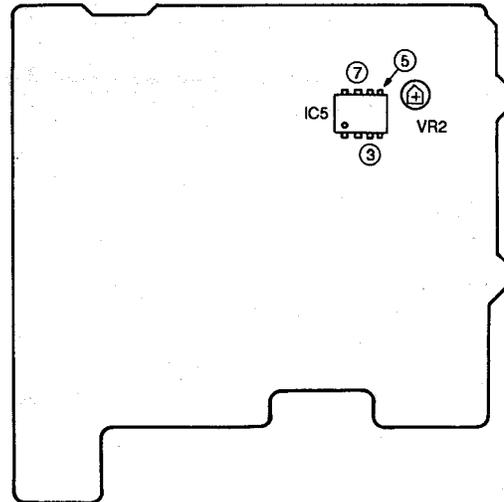


Fig. 5

IC BLOCK DIAGRAM

IC5 PQVIIR3N05

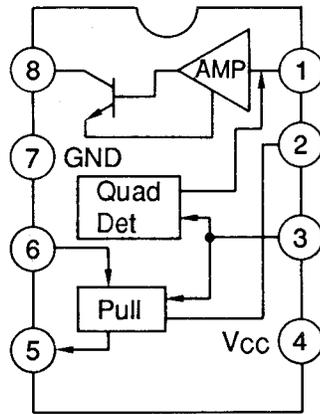
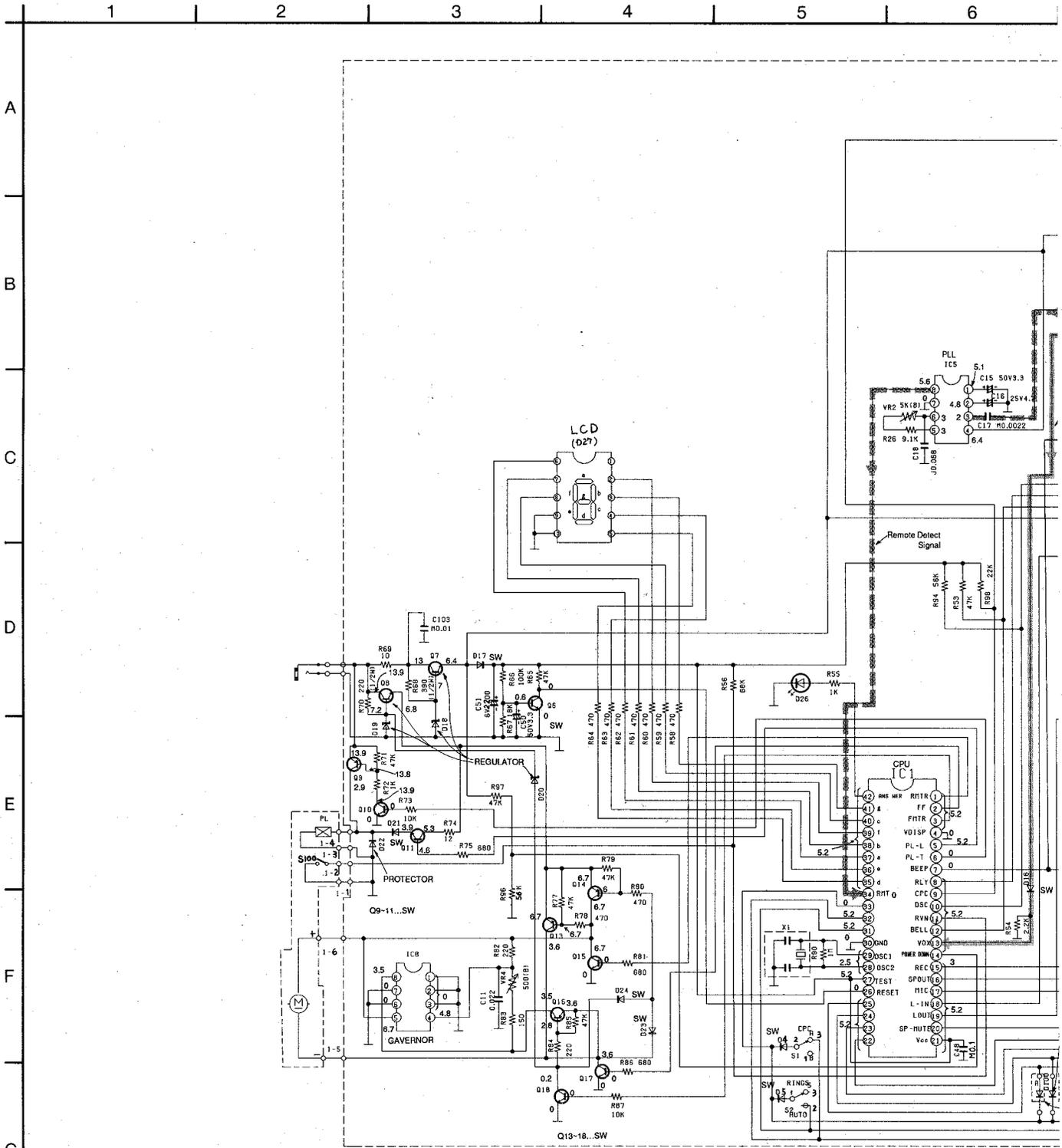


Fig. 6

TERMINAL GUIDE OF IC's, TRANSISTORS AND DIODES

<p>PQVI4148SA59</p>	<p>PQVITA7628P</p>	<p>PQVDSLZ155B2</p>	<p>PQVIIR3N05 PQVIBA6220 PQVINJM4558D</p>	<p>2SA1625 2SC2120</p>
<p>2SB1322 2SD662B</p>	<p>2SD1819 2SD601A</p>	<p>2SC1740</p>	<p>2SD2136</p>	<p>2SC3330 2SA854</p>
<p>PQVDS5688G</p>	<p>PQVDHDS7303 PQVDMT211B PQVDMT26R8 ISS119 ISS131</p>	<p>MA4180</p>		



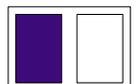
■ FOR SCHEMATIC DIAGRAM

Notes:

1. S1: CPC switch in "A" position.
2. S2: Ring selector switch in "AUTO" position.
3. S3: OGM recording switch.
4. S4: Rewind switch.
5. S5: Memo switch.
6. S6: Playback/Pause switch.
7. S7: Power switch.
8. S8: OGM-Play switch.
9. S100: Reed Switch.
10. DC voltage measurements are taken with electronic voltmeter from negative line.
11. This schematic diagram may be modified at any time with the development of new technology.

Important safety notice

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.



C DIAGRAM

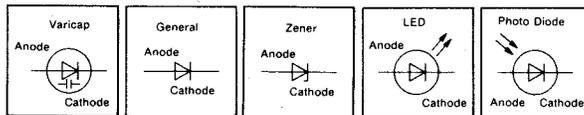
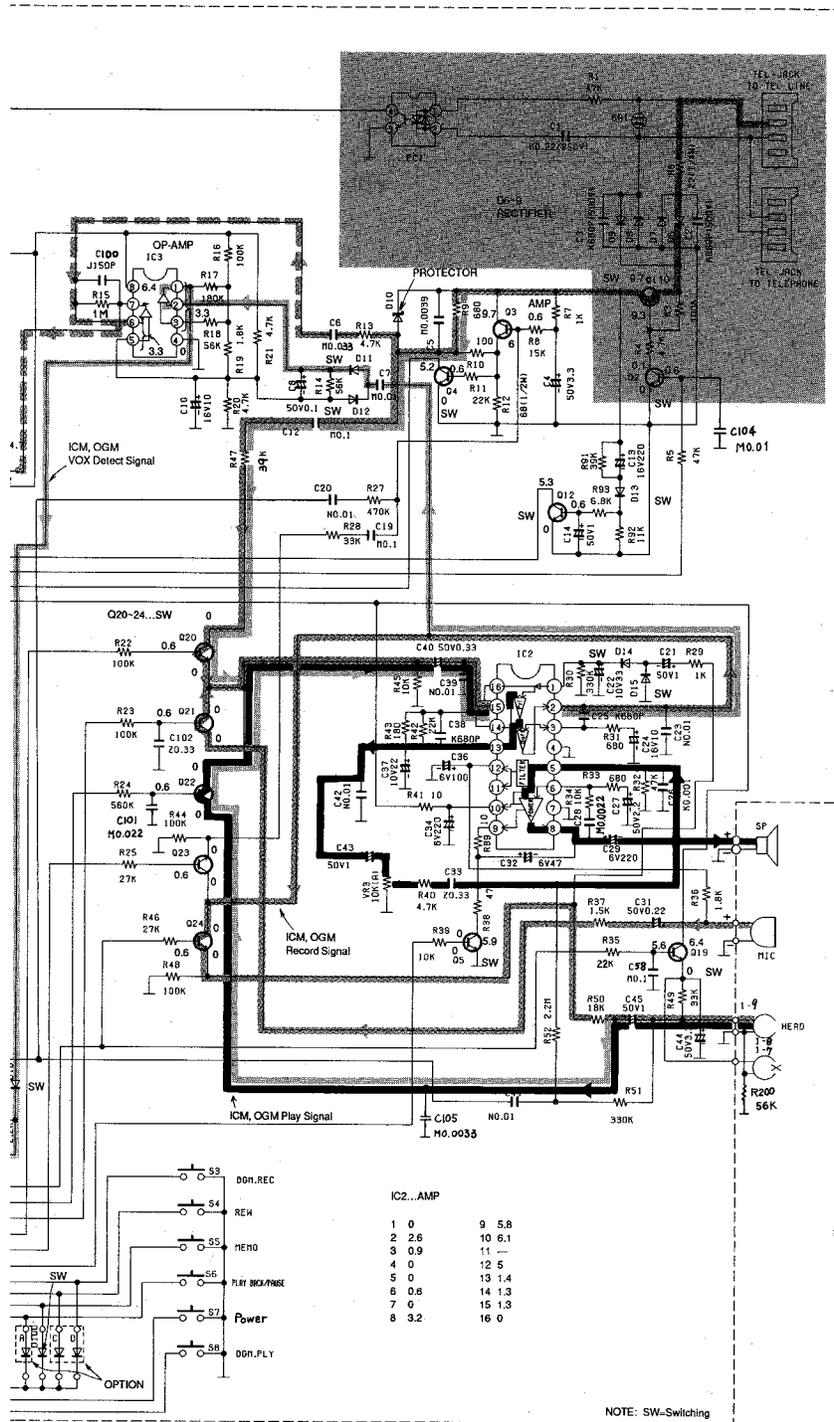
7

8

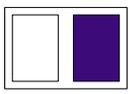
9

10

11



(Add 40 mA to telephone line from the loop simulator.)
 ● Off-hook condition



BLOCK DIAGRAM

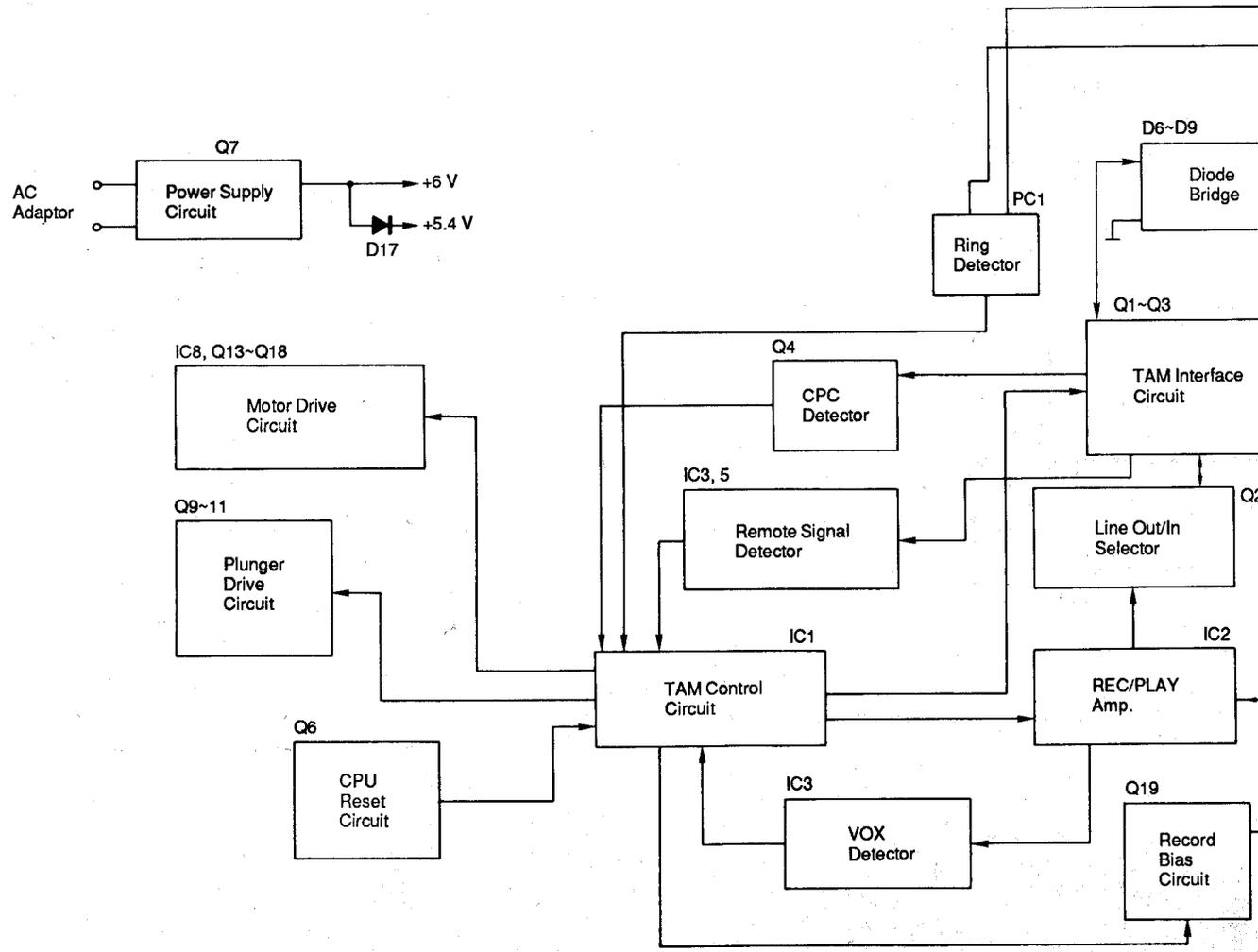


Fig. 7

TROUBLE SHOOTING GUIDE

■ SERVICE HINTS

SYMPTOM	CURE
Answering machine answers itself.	Check PC1 and R98.
ICM will not cut off.	Check C7, IC2 and IC3.
OGM won't store memory.	Check Q19.
No PWR/AFTER PWR fixed no plunger a activation.	Check Q7, Q8 and D18-D20.
Intermittent rewind.	Check Q15 and Q13.
Loss of OGM message even with good batteries.	Check Q19, Q5 and Q20-Q24.
No OGM.	Check Q19, Q5 and Q20-Q24.
Holds line constantly.	Check Q1 and Q2.
Shuts off after OGM.	Check leaky IC1.
Would not record all OGM.	Check Q19, C45, R50, IC1 and Q20-Q24.

ACCESSORIES AND PACKING MATERIALS

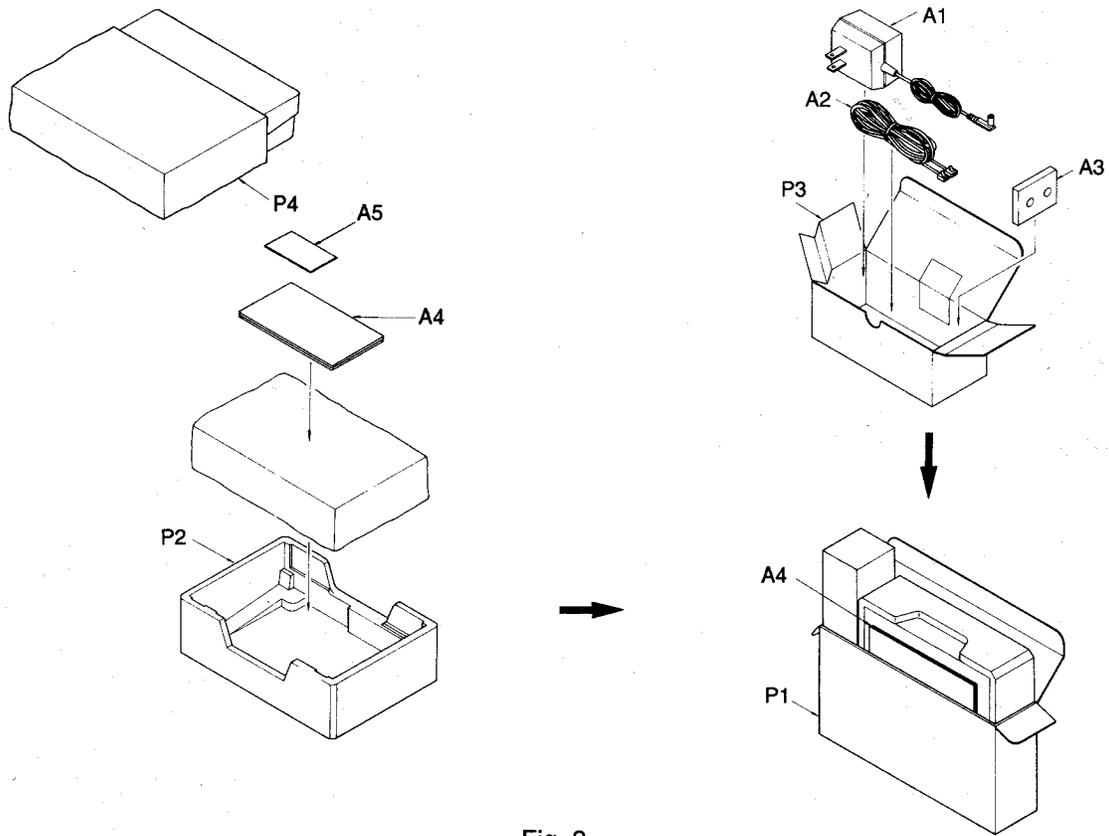


Fig. 8

EXTENSION CORD CONNECTING METHOD

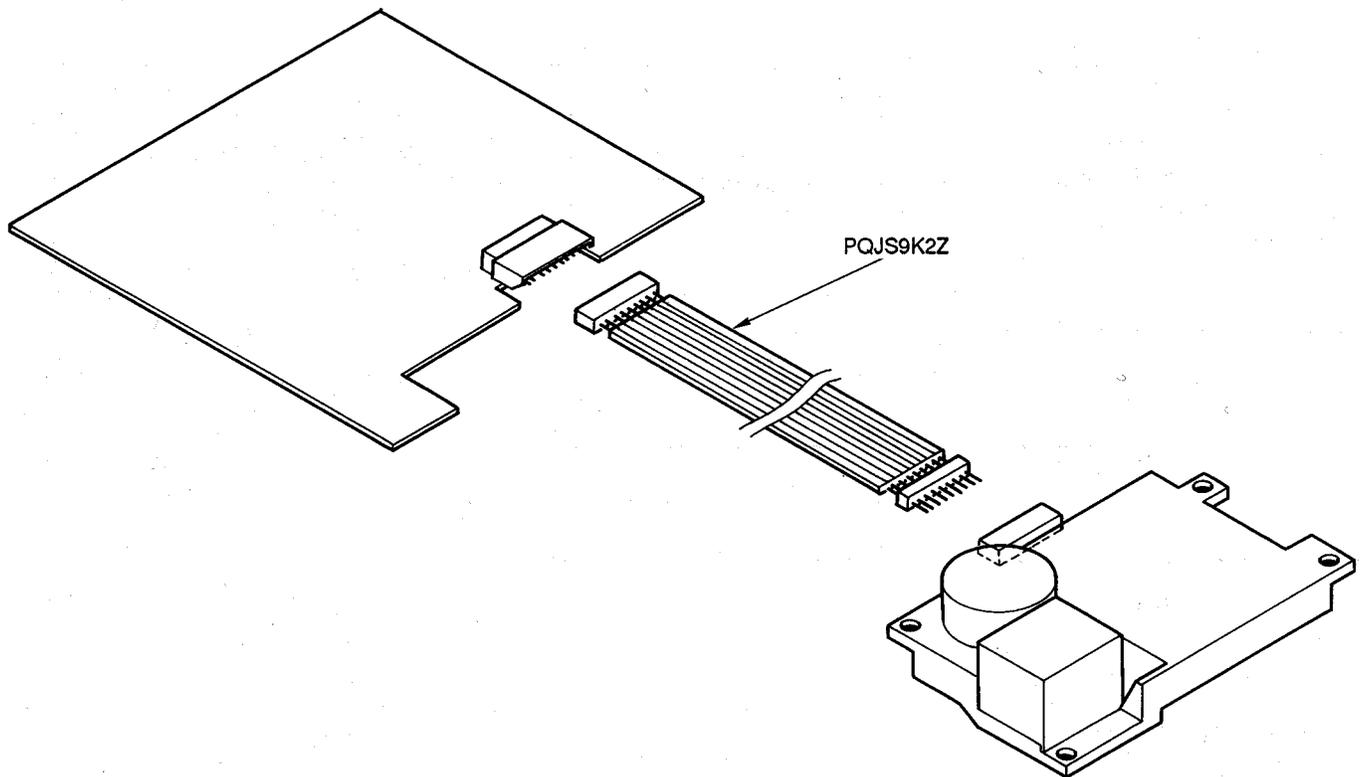


Fig. 9

CASSETTE DECK PARTS LOCATION

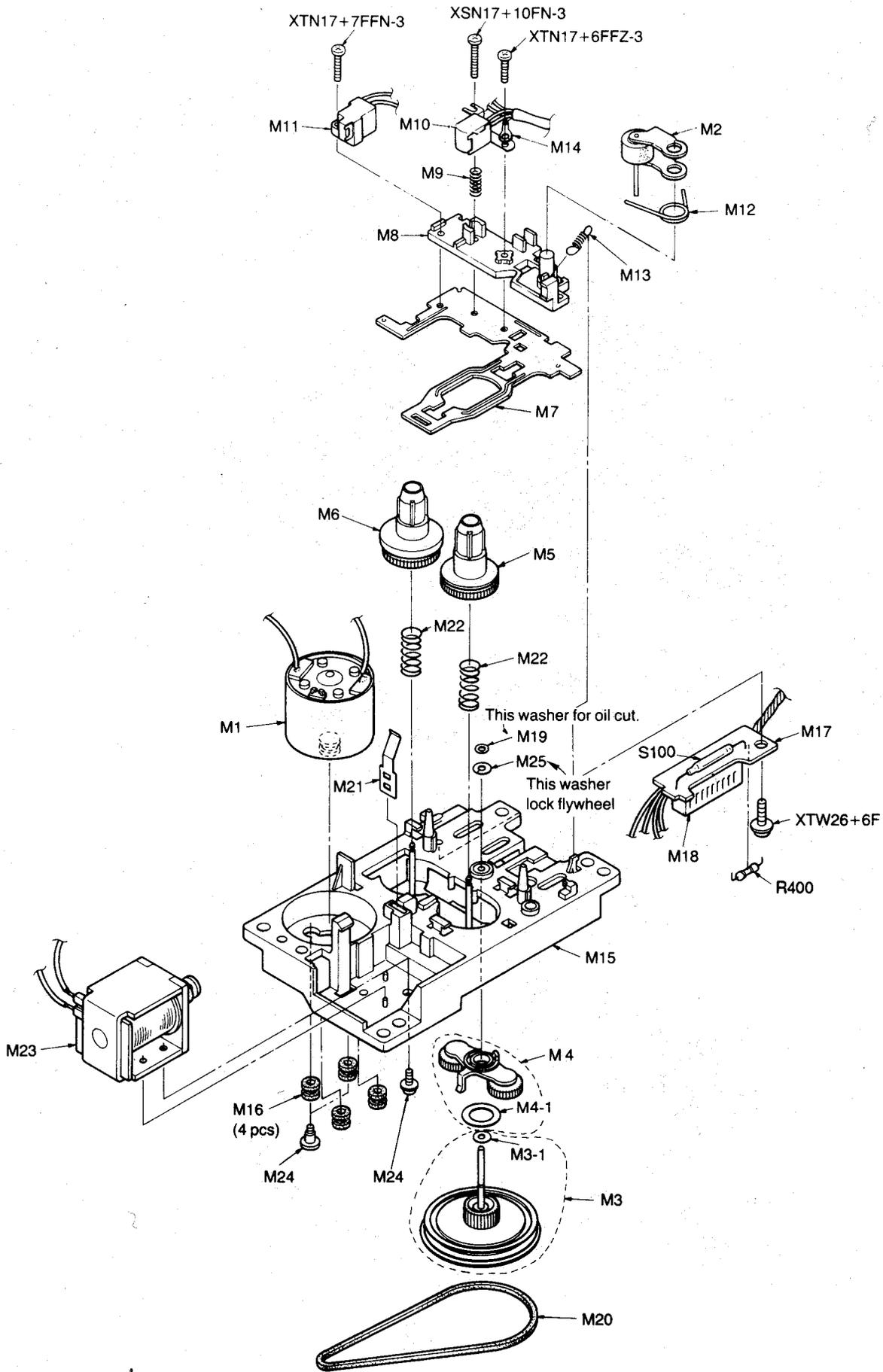


Fig. 10

CABINET AND ELECTRICAL PARTS LOCATION

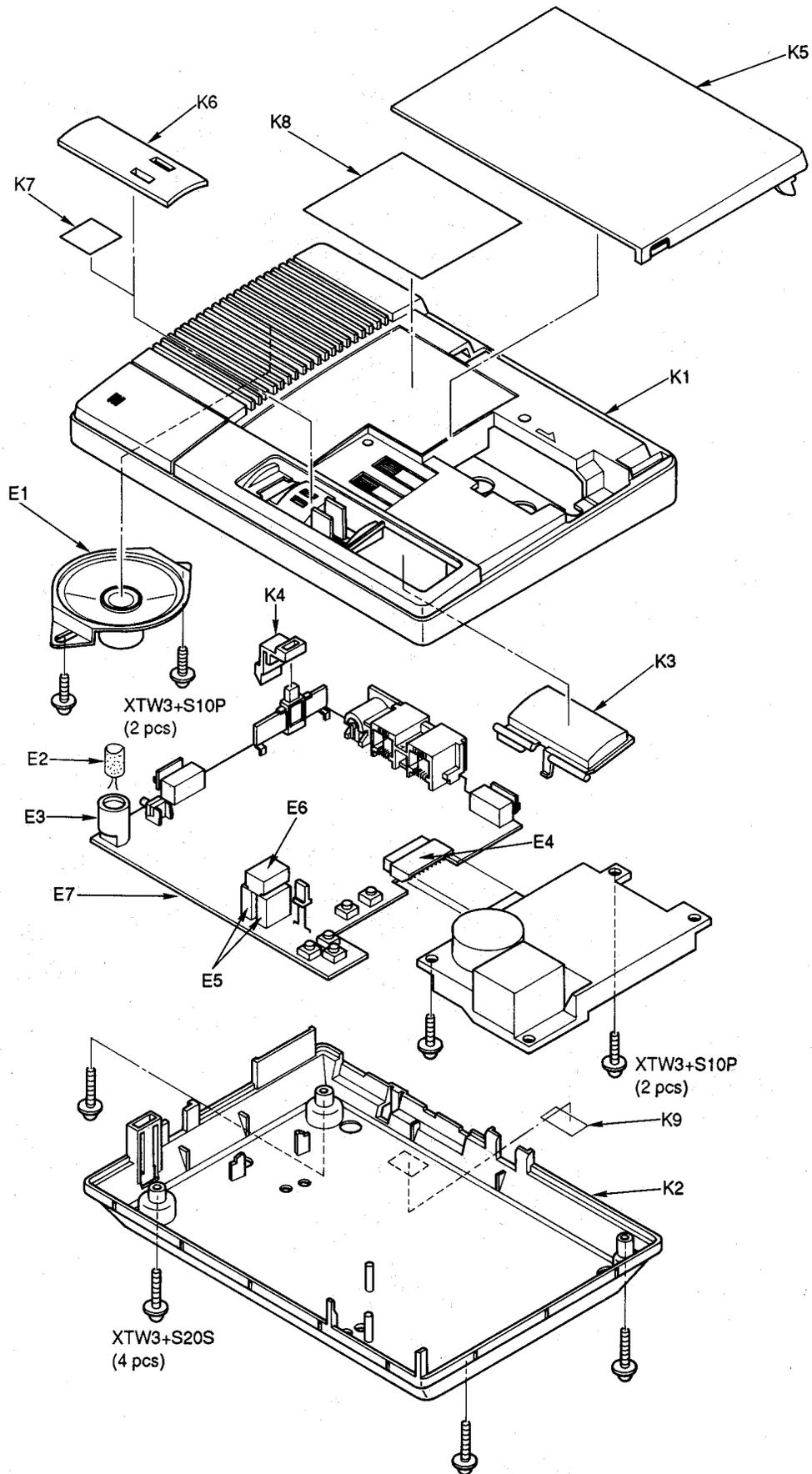


Fig. 11

REPLACEMENT PARTS LIST

Model KX-T1000

Notes:

- Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.
- Important safety notice.
Components identified by the Δ mark special characteristics important for safety, when replacing any of these components, use only manufacturer's specified parts.
- 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=1000 Ω , M=1000k Ω

All capacitors are in MICRO FARADS (μF) P= $\mu\mu F$

*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	12,50,S1:1/2W	1:1W	2:2W	3:3W
------------	------------	---------------	------	------	------

*Type & Voltage of Capacitor

Type

ECFD: Semi-Conductor	ECGD, ECKD, ECBT, PQCBC : Ceramic
ECQS: Styrol	ECQE, ECQV, ECQG : Polyester
PQCUV, ECUV, PQCBX: Chip	ECEA, ECSZ : Electrolytic
ECQMS: Mica	ECQP : Polypropylene

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
MECHANICAL PARTS			
M1	PQFM9913Z	MOTOR ASS'Y (WITH PULLEY)	1
M2	PQFD9913Z	PINCH ROLLER ASS'Y	1
M3	PQFF9909Z	FLYWHEEL ASS'Y	1
M3-1	PQFN35Z	WASHER	1
M4	PQFG9905Y	GEAR ASS'Y	1
M4-1	PQFN48Z	WASHER	1
M5	PQFR9912Z	TAKEUP REEL TABLE ASS'Y	1
M6	PQFR9914Z	SUPPLY REEL TABLE ASS'Y	1
M7	PQFD82Z	HEAD BASE PLATE	1
M8	PQFW42Z	HEAD BASE	1
M9	PQFS73Z	SPRING	1
M10	PQJH1M2Z	R/P HEAD	1
M11	PQJH6M2Z	ERASE HEAD	1
M12	PQFS109Z	SPRING	1
M13	PQFS110Z	SPRING	1
M14	PQFJ2Z	TERMINAL	1
M15	PQFC9909X	MECHANISM CHASSIS ASS'Y	1
M16	PQH14Z	RUBBER PARTS, MOTOR SPACER	2
M17	PQUP798Z	REED SWITCH P.C.BOARD	1
M18	PQJS9B30Z	CONNECTOR, 9PIN	1
M19	PQFN33Z	WASHER (FOR OIL CUT)	2
M20	PQFB12Z	BELT	1
M21	PQFD64Z	PLATE SPRING	1
M22	PQFS82Z	SPRING	2
M23	PQFP126Y	PLUNGER	1
M24	PQHD15Z	SCREW	2
M25	PQFN49Z	WASHER (FOR LOCK OF FLYWHEEL)	1
INTEGRATED CIRCUITS, TRANSISTORS AND DIODES			
IC1	PQVI4148SA59	IC	1
IC2	PQVITA7628P	IC	1
IC3	PQVINJM4558D	IC	1
IC5	PQVIR3N05	IC	1
IC8	PQVIBA6220	IC	1

Ref. No.	Part No.	Part Name & Description	Pcs
Q1	2SA1625	TRANSISTOR(SI)	1 Δ
Q2	2SD662B	TRANSISTOR(SI)	1 Δ
Q3, 15, 17	2SC2120	TRANSISTOR(SI)	S 3
Q4~6, 12, 19, 20~24	2SC1740S	TRANSISTOR(SI)	S 10
Q7, 8	2SD2136	TRANSISTOR(SI)	2
Q9	2SB1322	TRANSISTOR(SI)	S 1
Q10	2SD1819A	TRANSISTOR(SI)	1
Q11	2SC3330	TRANSISTOR(SI)	1
Q13, 14, 16	2SA854	TRANSISTOR(SI)	3
Q18	2SD601A	TRANSISTOR(SI)	S 1
D4, 5, 11~15, 23, 24, 100	1SS131	DIODE(SI)	S 10
D6~9	PQVDS5688G	DIODE(SI)	S 4 Δ
D10	MA4180	DIODE(SI)	S 1
D16	MA161	DIODE(SI)	S 1
D17, 21, 22	1SS119	DIODE(SI)	3
D18, 20	PQVDMTZ6R8	DIODE(SI)	2
D19	PQVDMTZ11B	DIODE(SI)	1
D26	PQVDSLZ155B3	LED	1
JACK			
JJ1	PQJ3HAA1Z	JACK, DC IN, TELEPHONE	1 Δ
SWITCHES			
S1, 2	PQSS2A27Y	SWITCH, CPC, RINGS	2
S3	EVQ12405K	SWITCH, OGM REC	1
S4~6, 8	EVQ12405K	SWITCH, RW, MEMO, P/P, OGM PLAY	4
S7	EVQQEH06K	SWITCH, ON/OFF	1
S100	PQSE108Z	SWITCH, REED (FOR DECK)	1
CABINET PARTS			
K1	PQKM171Z8	UPPER CABINET	1
K2	PQYF1041Z7	LOWER CABINET ASSEMBLY	1
K3	PQBC243Z	BUTTON, VOLUME/PAUSE	1
K4	PQBD140Z	KNOB, VOLUME	1
K5	PQGP102Z	CASSETTE LID	1
K6	PQGP103Z	LED PANEL	1
K7	PQHR5226Z	PLASTIC PARTS, LED	1
K8	PQQT5106Z	INDICATION PLATE-LABEL	1
K9	PQQT9348W	CODE LABEL	1
ELECTRICAL PARTS			
E1	PQASSP05Z	SPEAKER	1
E2	RJM142Z	MICROPHONE	1
E3	PQHG503Z	RUBBER, MICROPHONE	1
E4	PQJP9G63Z	CONNECTOR (9 PIN)	1
E5	PQJS5D33Z	CONNECTOR (5 PIN)	2
E6	PQVDHDP7303	LIQUID CRYSTAL DISPLAY (D27)	1
E7	PQWPT1000M	PRINTED CIRCUIT BOARD (NLA)	1
OTHERS			
SA1	PQVDSAE310F1	VARIATOR (SURGE ABSORBER)	S 1 Δ
VR2	PQNB3A00B53M	SEMI-FIXED, RESISTOR 5K Ω	1
VR3	PQVAL204A14A	VARIABLE RESISTOR	1
VR4	PQNB3A00B52M	SEMI-FIXED, RESISTOR 500 Ω	1
PC1	PQVIPC814K	PHOTO ELECTRIC TRANSDUCER	1 Δ
X1	PQVBFCA004A3	CRYSTAL	S 1
ACCESSORIES			
A1	KX-A11-W	AC ADAPTOR	1
A2	PQJA59Y	TELEPHONE CORD	S 1
A3	RT-N30-JT1P	CASSETTE TAPE	1
A4	PQOX5967Z	INSTRUCTION BOOK	1
A5	PQOX9394Z	DIAL CARD	1

Ref. No.	Part No.	Part Name & Description		Pcs	
PACKING MATERIALS					
P1	PQPK819Z	GIFT BOX		1	
P2	PQPN1000Z	CUSHION		1	
P3	PQPN849Z	ACCESSORY BOX		1	
P4	XZB20X35A01	PROTECTION COVER		1	
Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
RESISTORS					
R1	PQ4R10XJ473	47K Δ	R49	PQ4R10XJ333	33K
R2	Not Used		R50	PQ4R10XJ183	18K
R3	PQ4R10XJ104	100K Δ	R51	PQ4R10XJ334	330K
R4	PQ4R10XJ472	4.7K Δ	R52	PQ4R10XJ225	2.2M
R5	ERD16TJ473	47K	R53	ERD16TJ473	47K
R6	ERD25TJ220	22 Δ	R54	PQ4R10XJ222	2.2K
R7	PQ4R10XJ102	1K	R55	PQ4R10XJ102	1K
R8	PQ4R10XJ153	15K	R56	ERD16TJ683	68K
R9	PQ4R10XJ681	680	R57	Not Used	
R10	PQ4R10XJ121	120	R58	PQ4R10XJ471	470
R11	PQ4R10XJ223	22K	R59	PQ4R10XJ471	470
R12	ERDS1TJ680	68	R60	PQ4R10XJ471	470
R13	PQ4R10XJ472	4.7K	R61	PQ4R10XJ471	470
R14	PQ4R10XJ563	56K	R62	PQ4R10XJ471	470
R15	PQ4R10XJ105	1M	R63	PQ4R10XJ471	470
R16	PQ4R10XJ104	100K	R64	PQ4R10XJ471	470
R17	PQ4R10XJ184	180K	R65	PQ4R10XJ473	47K
R18	PQ4R10XJ563	56K	R66	ERD16TJ104	100K
R19	PQ4R10XJ182	1.8K	R67	ERD16TJ183	18K
R20	PQ4R10XJ472	4.7K	R68	ERDS1TJ391	390
R21	PQ4R10XJ472	4.7K	R69	PQRQ003VJ100	10
R22	PQ4R10XJ104	100K	R70	ERDS1TJ221	220
R23	PQ4R10XJ104	100K	R71	PQ4R10XJ473	47K
R24	PQ4R10XJ564	560K	R72	PQ4R10XJ102	1K
R25	ERD16TJ273	27K	R73	ERD16TJ103	10K
R26	PQ4R10XJ912	9.1K	R74	ERD16TJ120	12
R27	PQ4R10XJ474	470K	R75	PQ4R10XJ681	680
R28	PQ4R10XJ333	33K	R76	Not Used	
R29	PQ4R10XJ102	1K	R77	PQ4R10XJ473	47K
R30	PQ4R10XJ334	330K	R78	PQ4R10XJ471	470
R31	PQ4R10XJ681	680	R79	PQ4R10XJ473	47K
R32	PQ4R10XJ473	47K	R80	PQ4R10XJ471	470
R33	PQ4R10XJ681	680	R81	PQ4R10XJ681	680
R34	PQ4R10XJ103	10K	R82	PQ4R10XJ221	220
R35	PQ4R10XJ223	22K	R83	PQ4R10XJ151	150
R36	PQ4R10XJ182	1.8K	R84	PQ4R18XJ221	220
R37	PQ4R10XJ152	1.5K	R85	PQ4R10XJ473	47K
R38	ERD16TJ470	47	R86	ERD16TJ681	680
R39	ERD16TJ103	10K	R87	PQ4R10XJ103	10K
R40	PQ4R10XJ472	4.7K	R88	Not Used	
R41	ERD16TJ100	10	R89	PQ4R10XJ100	10
R42	PQ4R10XJ223	22K	R90	PQ4R10XJ105	1M
R43	PQ4R10XJ181	180	R91	PQ4R10XJ393	39K
R44	PQ4R10XJ104	100K	R92	PQ4R10XJ113	11K
R45	PQ4R10XJ103	10K	R93	ERD16TJ682	6.8K
R46	ERD16TJ273	27K	R94	PQ4R10XJ563	56K
R47	PQ4R10XJ393	39K	R95	Not Used	
R48	PQ4R10XJ104	100K	R96	PQ4R10XJ563	56K
			R97	ERD16TJ473	47K
			R98	PQ4R10XJ223	22K
			R200	PQRDS2TJ563 (FOR DECK)	56K

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
CAPACITORS					
C1	ECQE2224KF	0.22 Δ	C31	ECEA1HUR22	0.22
C2	ECKD2H681KB	680P Δ	C32	ECEA1CK5470	47
C3	ECKD2H681KB	680P Δ	C33	PQCUV1C334ZF	0.33
C4	ECEA1HU3R3	3.3	C34	ECEA0JK221	220
C5	PQCBC1C392MX	0.0039	C35	Not Used	
C6	ECFD1C333KD	0.033	C36	ECEA1CK101	100
C7	PQCUV1H103KB	0.01	C37	ECEA1HU220	22
C8	ECEA1HU0R1	0.1	C38	PQCUV1H681JC	680P
C9	Not Used		C39	PQCUV1H103KB	0.01
C10	ECEA1CK5100	10	C40	ECEA1HUR33	0.33
C11	PQCBC1E223ZF	0.022	C41	Not Used	
C12	ECUV1H104MD	0.1	C42	PQCUV1H103KB	0.01
C13	ECEA1CU221	220	C43	ECEA1HKS010	1
C14	ECEA1HU010	1	C44	ECEA1HKS3R3	3.3
C15	ECEA1HKS3R3	3.3	C45	ECEA1HU010	1
C16	ECEA1HKS4R7	4.7	C46	Not Used	
C17	PQCBC1C222MX	0.0022	C47	PQCBC1C103MY	0.01
C18	ECQV1H683JZ	0.068	C48	ECUV1H104MD	0.1
C19	ECFD1C104KD	0.1	C49	Not Used	
C20	PQCBC1C103MY	0.01	C50	ECEA1HU3R3	3.3
C21	ECEA1HKS010	1	C51	ECEA0JU222	2200
C22	ECEA1AKS330	33			
C23	PQCUV1H103KB	0.01	C58	ECUV1H104MD	0.1
C24	ECEA1CK5100	10			
C25	PQCUV1H681JC	680P	C100	PQCUV1H151JC	150P
C26	PQCUV1H102J	0.001	C101	PQCUV1H223KB	0.022
C27	ECEA1HKS2R2	2.2	C102	PQCUV1C334ZF	0.33
C28	PQCBC1C222MX	0.0022	C103	ECUV1H103KB	0.01
C29	ECEA0JK221	220	C104	PQCUV1H103KB	0.01
			C105	ECUV1H332KB	0.0033