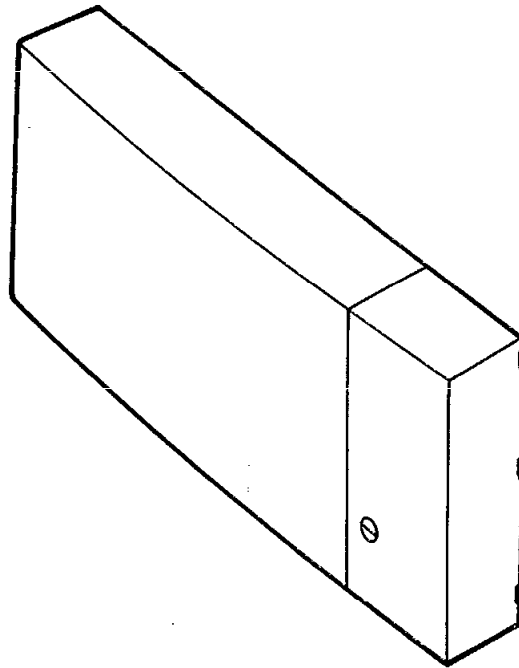


Service Manual

4-CO LINE UNIT

KX-TD180E

(for United Kingdom)

**⚠ 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.

Panasonic

©1995 Kyushu Matsushita Electric Co., Ltd.
All rights reserved. Unauthorized copying and distribution is a violation of law.

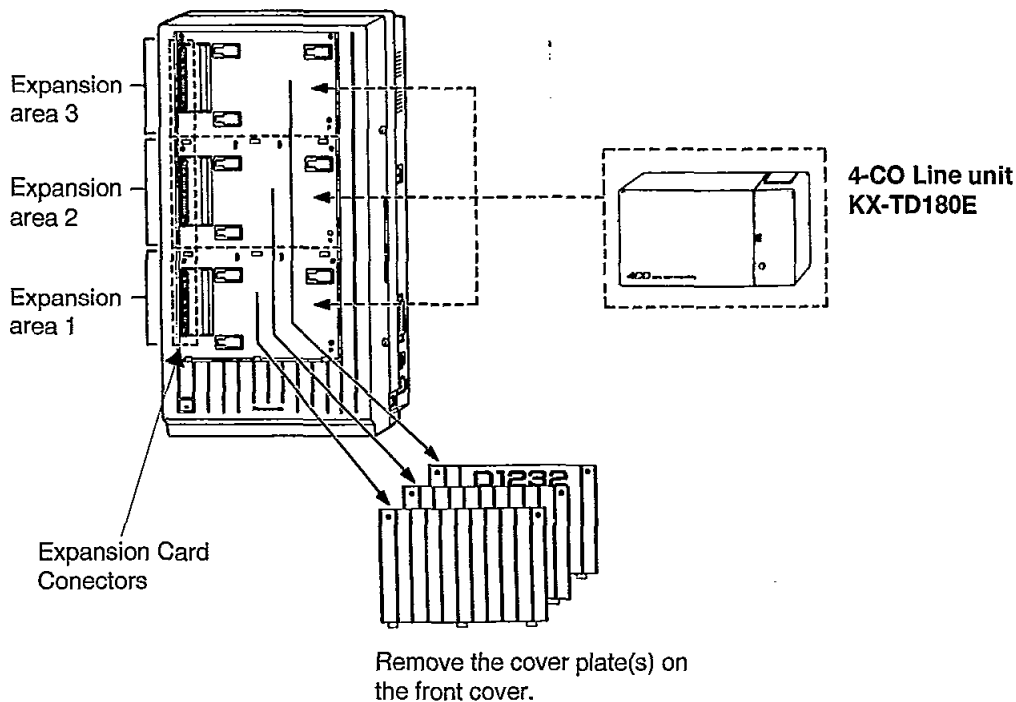
TABLE OF CONTENTS

LOCATION OF THE CARDS (UNITS)	2
DISASSEMBLY INSTRUCTIONS	3, 4
CIRCUIT OPERATIONS	4
PRINTED CIRCUIT BOARD	5~8
SCHEMATIC DIAGRAM	9, 10
HOW TO REPLACE FLAT PACKAGE IC	11
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES	12
ACCESSORIES AND PACKING MATERIALS	13
CABINET AND ELECTRICAL PARTS LOCATION	14
REPLACEMENT PARTS LIST	15, 16

LOCATION OF THE CARDS (UNITS)

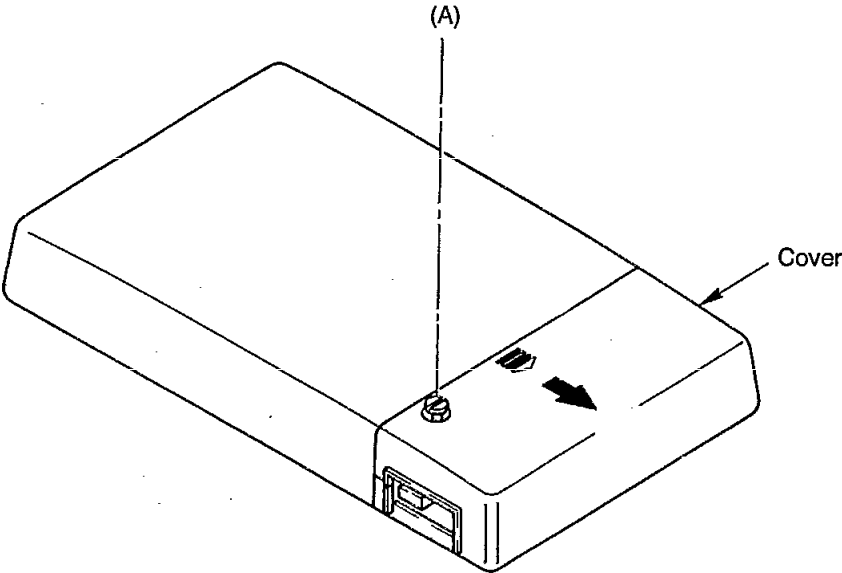
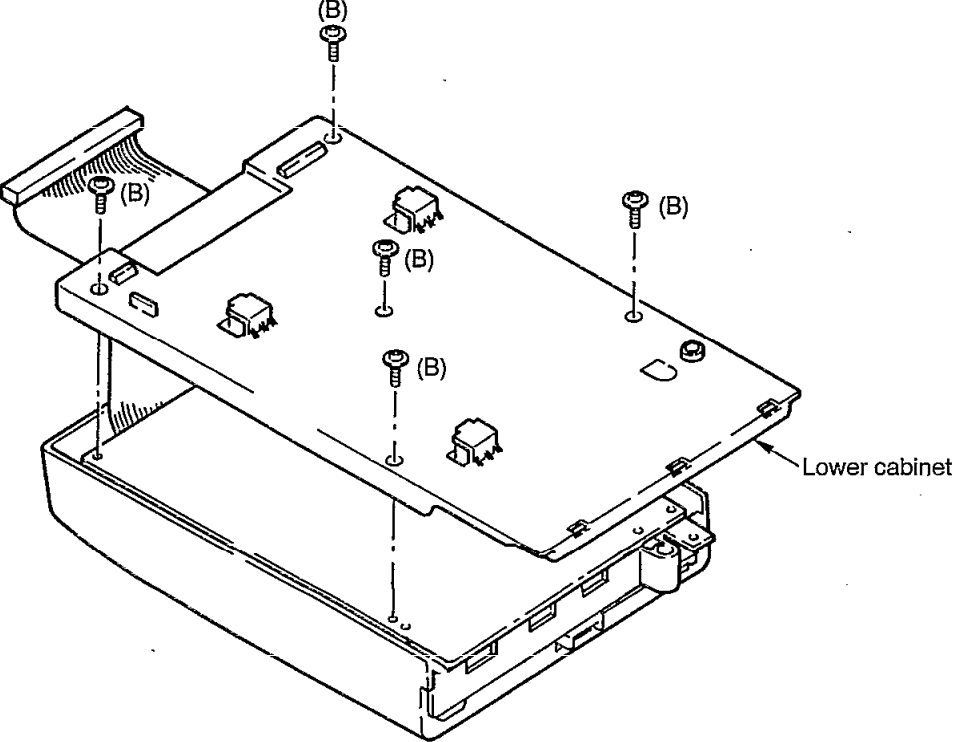
The location of the optional cards (units) shown below.

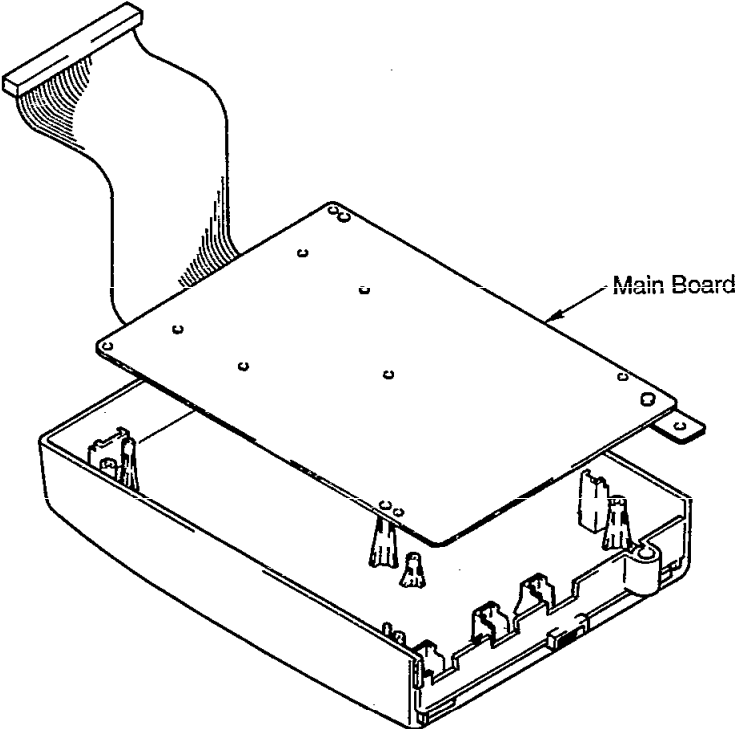
Up to two Extension Expansion Cards (units) can be installed to any expansion area on the main unit, KX-TD1232E.



Notes: System Programming is required for card location identification. For details, refer to the Installation Manual.

DISASSEMBLY INSTRUCTIONS

Ref. No. 1	HOW TO REMOVE THE COVER
Procedure 1	1. Remove the screw (A). 2. Slide the cover in the direction of the arrow.
	
Ref. No. 2	HOW TO REMOVE THE LOWER CABINET
Procedure 1→2	1. Remove the 5 screws (B). 2. Remove the lower cabinet.
	

Ref. No. 3	HOW TO REMOVE THE MAIN BOARD
Procedure 1→2→3	1. Remove the main board.
	

■ CIRCUIT OPERATIONS

1. FUNCTION

4-CO LINE UNIT (KX-TD180E) is an optional unit for extending the CO lines from 8 up to 12 lines. The differences between this unit is as follows;

- The number of lines are 4. (8 for basic one)

Refer to the Service Manual for KX-TD1232E as for the details of EXPANSION CO CARD (KX-TD181E)

2. EXPLANATION OF CIRCUIT OPERATION

1) EXPANSION CO CARD

The circuit on this unit has the following differences from the EXPANSION CO CARD (KX-TD181E). Others are the same as the EXPANSION CO CARD (KX-TD181E).

- Number of CO lines are four.

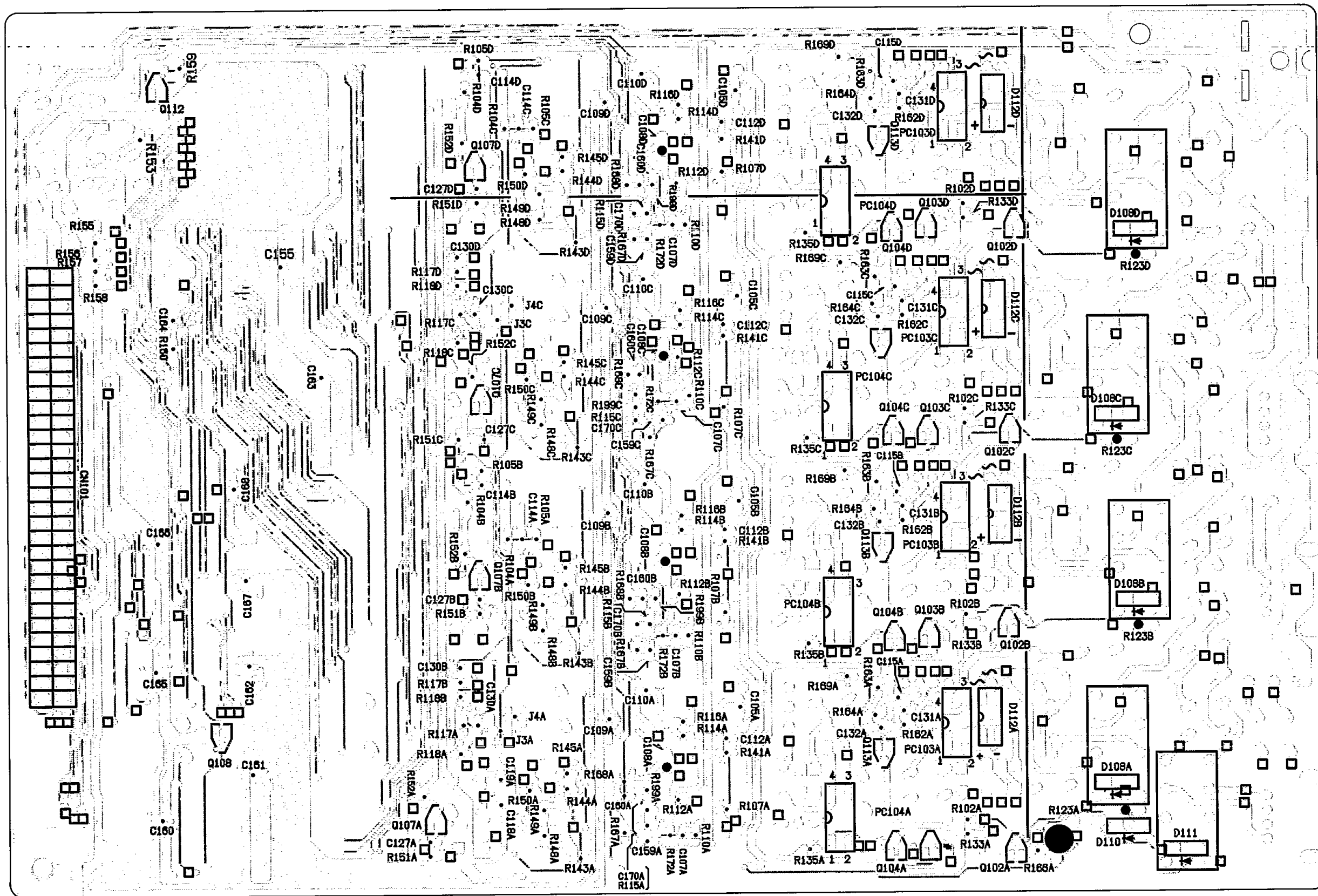
Refer to the Service Manual for KX-TD1232E as for the details of EXPANSION CO CARD (KX-TD181E).

PRINTED CIRCUIT BOARD

(BOTTOM VIEW)

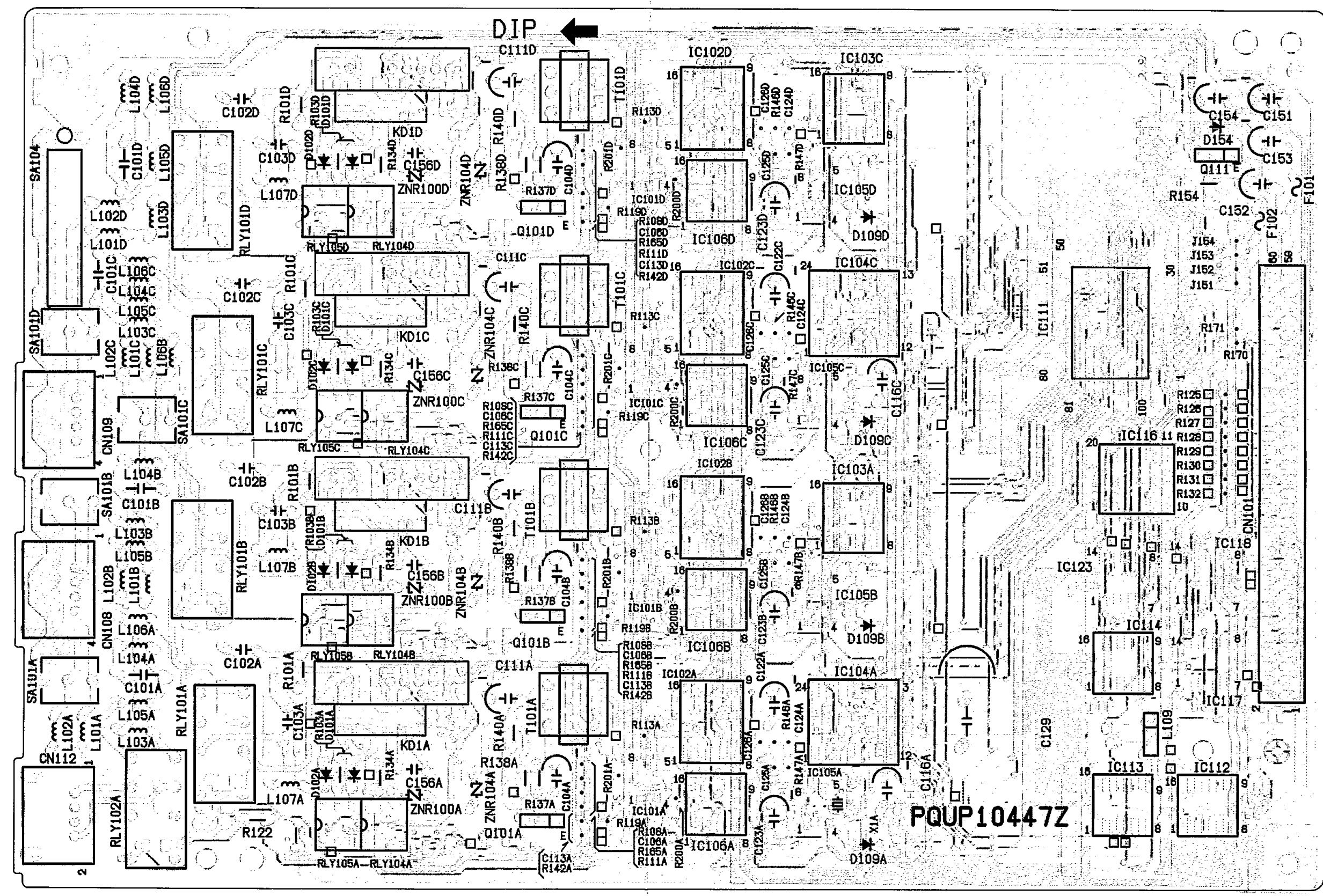
1 2 3 4 5 6 7 8 9 10 11 12

A
B
C
D
E
F
G
H



PRINTED CIRCUIT BOARD

(COMPONENT VIEW)



HOW TO REPLACE FLAT PACKAGE IC

■ PREPARATION

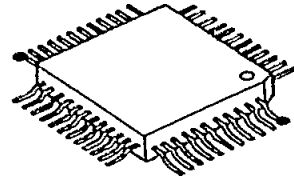
- SOLDER..... Sparkle Solder 115A-1, 115B-1
OR
Almit Solder KR-19, KR-19RMA
- Soldering iron Recommended power consumption will be between 30 W to 40 W.
Temperature of Copper Rod $662 \pm 50^{\circ}\text{F}$ ($350 \pm 10^{\circ}\text{C}$)

(An expert may handle 60~80 W iron, but beginner might damage foil by overheating.)
- Flux..... HI115 Specific gravity 0.863

(Original flux will be replaced daily.)

■ PROCEDURE

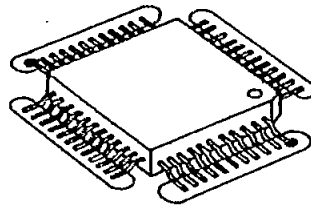
1. Temporary fix FLAT PACKAGE IC by Soldering on marked 2 pins.



●..... Temporary soldering point.

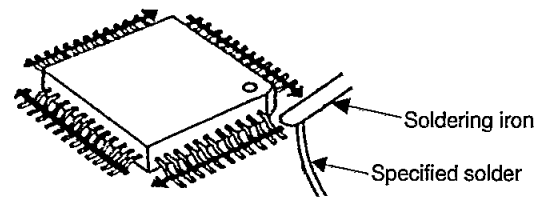
*Most important matter is accurate setting of IC to the corresponding soldering foil.

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



..... Flux

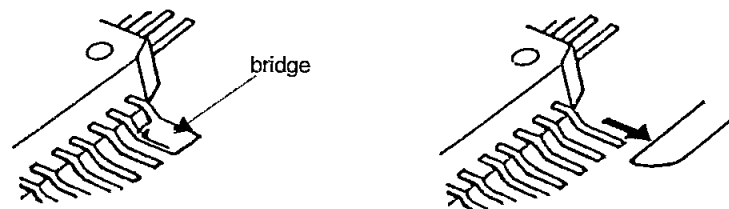
3. Solder employing specified solder to direction of arrow, as sliding the soldering iron.



Soldering iron
Specified solder

■ MODIFICATION PROCEDURE OF BRIDGE

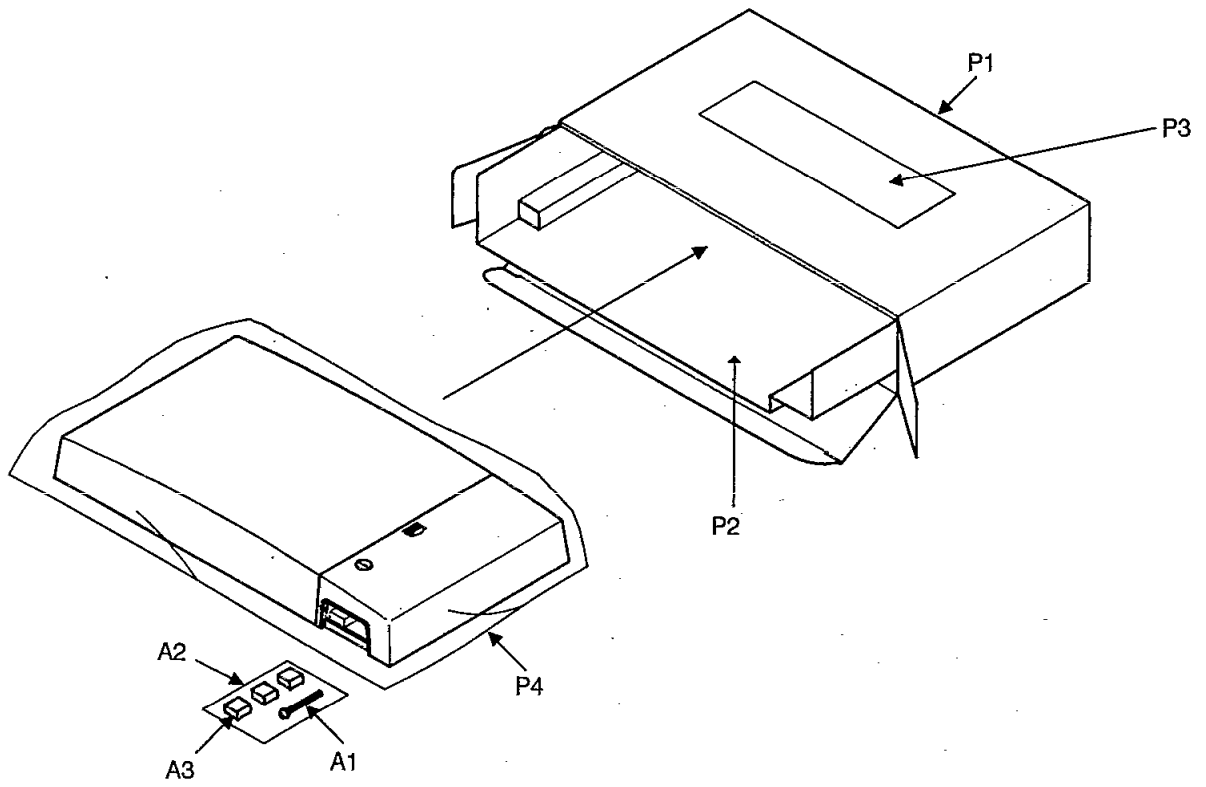
1. Re-solder slightly on bridged portion.
2. Remove remained solder along pins employing soldering iron as shown in below figure.



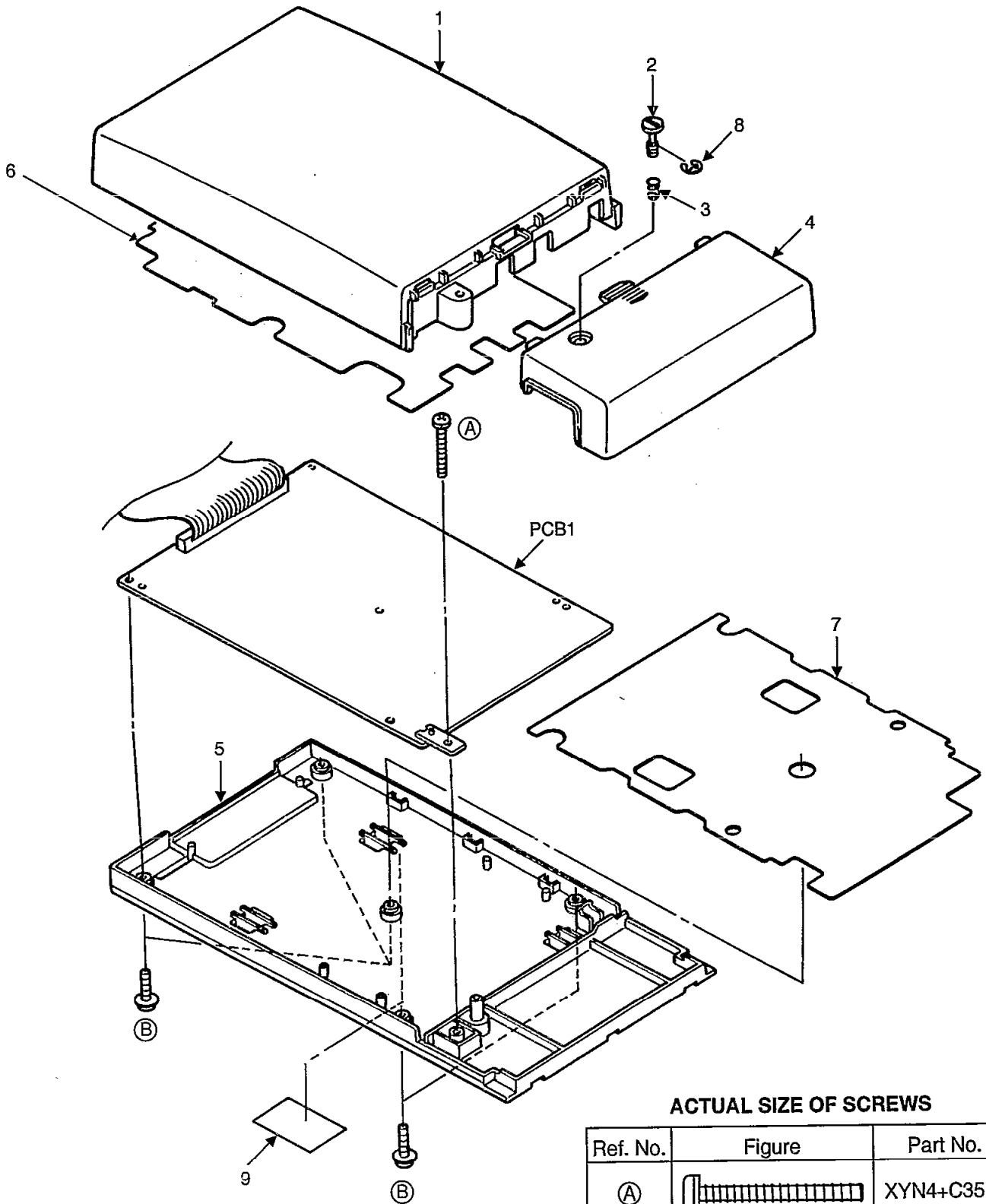
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

<p>PQVINJM4558M</p>	<p>PQVI63HB110</p>	<p>PQVISN7L14S PQVISN7L08S</p>	<p>PQVIMC45503W PQVISN7L175M PQVISN7L138M PQVIMC14520F</p>	<p>PQVISN7L640M</p>
<p>2SC2590</p>	<p>UN521 UN5113</p>	<p>2SB1322</p>	<p>MA4120</p>	<p>1SS131</p>
<p>MA4056</p>	<p>RLS71</p>	<p>PQVDS1ZB40F1</p>		

ACCESSORIES AND PACKING MATERIALS



CABINET AND ELECTRICAL PARTS LOCATION



ACTUAL SIZE OF SCREWS

Ref. No.	Figure	Part No.
(A)		XYN4+C35FN
(B)		XTW3+S14P

This replacement parts list is for KX-TD180E.

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

REPLACEMENT PARTS LIST

Model KX-TD180E

Notes:

1. 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 dependent 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 Δ mark special characteristics important for safety.

When replacing any of these components, use only manufacturer'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=1000 Ω , M=1000k Ω

All capacitors are in MICRO FARADS (μ F) P= μ F

*Type & Wattage of Resistor

Type

ERC:Solid	ERX:Metal Film	PQRD:Carbon
ERD:Carbon	ERG:Metal Oxide	PQRQ:Fuse
PQ4R:Chip	ERO:Metal Film	ERF:Wire Wound

Wattage

10,16,18:1/8W	14,25,S2:1/4W	12,50,S1:1/2W	1:1W	2:2W	5:5W
---------------	---------------	---------------	------	------	------

*Type & Voltage of Capacitor

Type

ECFD:Semi-Conductor	ECGD,ECKD,PQCBC,PQVP : Ceramic
ECQS:Styrol	ECQM,ECQV,ECQE,ECQU,ECQB : Polyester
PQCBX,ECUV:Chip	ECEA,ECSZ,ECOS : Electrolytic
ECMS:Mica	ECQP : Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others		
1H: 50V	05: 50V	OF:3.15V	OJ :6.3V	1V :35V	
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V	
2E:250V	2:200V	1V:35V	1C :16V	1J :83V	
2H:500V		OJ:6.3V	1E,25:25V	2A :100V	

Ref. No.	Part No.	Part Name & Description	Pcs
CABINET & ELECTRICAL PARTS			
1	PQKM10029F1	UPPER CABINET	1
2	PQHD10011Z	SCREW	1
3	PQUS141Z	SPRING	1
4	PQKV10007Z1	COVER	1
5	PQKF10026Y1	LOWER CABINET	S 1
6	PQMC10065Z	SHIELD SHEET-A	1
7	PQMC10066X	SHIELD SHEET-B	S 1
8	XUC3VW	RETAINING RING	1
9	PSGT1052Y	NAME PLATE	1
ACCESSORIES AND PACKING MATERIALS			
A1	XYN4+C35FN	SCREW	1
A2	XZB05X08A03	PROTECTION COVER (FOR ACCESSORY)	1
A3	PQJS04S08Z	CONNECTOR	3
P1	PQPK10118Z	GIFT BOX	1
P2	PQPD10027Z	CUSHION	1
P3	PSQ1043Y	MODEL NO. LABEL	1
P4	PQPP10047Z	PROTECTION COVER (FOR SET)	1

Ref. No.	Part No.	Part Name & Description	Pcs
MAIN BOARD PARTS			
PCB1	PSWP1TD180E	MAIN BOARD ASS'Y (RTL) Δ	1
(ICs)			
IC101A-D	PQVINJM4558M	IC	4
IC102A-D	PQVIMC45503W	IC	4
IC103A,C	PQVIMC14520F	IC	2
IC111	PQVI63HB110	IC	S 1
IC112	PQVISN7L138M	IC	1
IC113	PQVISN7L175M	IC	1
IC114	PQVISN7L138M	IC	1
IC116	PQVISN7L640M	IC	1
IC117	PQVISN7L08S	IC	S 1
IC118	PQVISN7L86S	IC	S 1
IC123	PQVISN7L14S	IC	S 1
KD1A-D	PQVIHFS113F1	IC	4
(TRANSISTORS)			
Q101A-D	2SC2590	TRANSISTOR(SI)	4
Q102A-D	UN521	TRANSISTOR(SI)	S 4
Q103A-D	UN521	TRANSISTOR(SI)	S 4
Q104A-D	UN521	TRANSISTOR(SI)	S 4
Q108	UN521	TRANSISTOR(SI)	S 1
Q111	2SB1322	TRANSISTOR(SI) (or 2SB1237R)	S 1
Q112	UN5113	TRANSISTOR(SI)	S 1
(DIODES)			
D101A-D	1SS131	DIODE(SI)	4
D102A-D	MA4120	DIODE(SI)	4
D108A-D	RLS71	DIODE(SI)	4
D110	RLS71	DIODE(SI)	1
D111	RLS71	DIODE(SI)	1
D112A-D	PQVDS1ZB40F1	DIODE(SI)	4
D154	MA4056	DIODE(SI)	1
(CAPACITORS)			
C101A-D	ECKDKC222KB	0.0022	S 4
C102A-D	ECQE2185KS	0.68	S 4
C104A-D	ECEA1HKS010	1	S 4
C105A-D	PQCUV1H102J	0.001	4
C106A-D	PQCUV1H683KB	0.068	4
C107A-D	PQCUV1H270JC	27P	4
C108A-D	PQ4R18XJ000	0 (RESISTOR)	4
C109A-D	PQCUV1H223KB	0.022	S 4
C110A-D	PQCUV1H223KB	0.022	S 4
C111A-D	ECEA1HU330	33	S 4
C112A-D	PQCUV1C154KB	0.15	4
C113A-D	PQCUV1C154KB	0.15	4
C114A-D	PQCUV1H102KB	0.001	4
C115A-D	PQCUV1H223KB	0.022	S 4
C129	ECEA1CSS222	2200	1
C151	ECEA1HU330	33	1
C152	ECEA1HU330	33	1
C153	ECEA1HU330	33	1
C154	ECEA1HKS010	1	S 1
C155	PQCUV1H223KB	0.022	S 1

This replacement parts list is for KX-TD180E.

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

Ref. No.	Part No.	Part Name & Description	Pcs	Ref. No.	Part No.	Part Name & Description	Pcs
C160	PQCUV1H223KB	0.022	S 1	R200A-D	PQ4R10XJ330	33	
C161	PQCUV1H223KB	0.022	S 1	R201A-D	PQ4R10XJ330	33	4
C162	PQCUV1H223KB	0.022	S 1				
C163	PQCUV1H223KB	0.022	S 1	J151	PQ4R10XJ000	0	1
C164	PQCUV1H103KB	0.01	1	J152	PQ4R10XJ000	0	1
C165	PQCUV1H223KB	0.022	S 1	J153	PQ4R10XJ000	0	1
C166	PQCUV1H223KB	0.022	S 1	J154	PQ4R10XJ000	0	1
C167	PQCUV1H223KB	0.022	S 1				
C168	PQCUV1H223KB	0.022	S 1	L107A-D	ERDS2TJ0T	0	4
C170A-D	PQCUV1H151JC	150P	4				
		(RESISTORS)		L101A-D	PQLQZK220K	COIL	4
R101A-D	PQRD12VJ822	8.2K	4	L102A-D	PQLQZK220K	COIL	4
R102A-D	PQ4R10XJ152	1.5K	4	L103A-D	PQLE106	COIL	S 4
R103A-D	ERDS2TJ103	10K	4	L104A-D	PQLE106	COIL	S 4
R104A-D	PQ4R10XJ103	10K	4	L105A-D	PQLE106	COIL	S 4
R105A-D	PQ4R10XJ394	390K	4	L106A-D	PQLE106	COIL	S 4
R107A-D	PQ4R10XJ561	560	4	L109	PQVFTU50MT	CERAMIC FILTER	1
R108A-D	PQ4R10XF1201	1.2K	4				
R110A-D	PQ4R10XJ823	82K	4			(FUSES)	
R111A-D	ERJ6ENF1003	100K	4	F101,102	PQBA1N15NMAL	FUSE	2
R112A-D	PQ4R10XJ393	39K	4				
R113A-D	ERJ6ENF1003	100K	4			(PHOTO ELECTRIC TRANSDUCERS)	
R114A-D	ERJ6ENF3302	3.0K	4	PC103A-D	PQVITLP521	PHOTO COUPLER	△ 4
R115A-D	PQ4R10XJ823	82K	4	PC104A-D	PQVITLP521	PHOTO COUPLER	△ 4
R116A-D	PQ4R10XJ333	33K	4				
R119A-D	PQ4R10XJ561	560	4				
R122	ERDS2TJ181	180	1			(RELAYS)	
R123A-D	PQ4R18XJ820	82	4	RY101A-D	PQSL120Z	RELAY	△ 4
R125	PQ4R10XJ101	100	1	RY102A	PQSL120Z	RELAY	△ 1
R126	PQ4R10XJ101	100	1	RY104A-D	AQV214SX	RELAY	△ 4
R127	PQ4R10XJ101	100	1	RY105A-D	AQV414S	RELAY	△ 4
R128	PQ4R10XJ101	100	1				
R129	PQ4R10XJ101	100	1			(VARISTORS)	
R130	PQ4R10XJ101	100	1	SA101A-D	PQVDT83A350X	VARISTOR (SURGE ABSORBER)	4
R131	PQ4R10XJ101	100	1	SA104	PQVDDSA102MA	VARISTOR (SURGE ABSORBER)	1
R132	PQ4R10XJ101	100	1			(VARISTOR)	
R133A-D	PQ4R10XJ102	1K	1	ZR104A-D	ERZC07DK820	VARISTOR	S 4
R134A-D	ERDSTJ330	33	4				
R135A-D	PQ4R10XJ331	330	4			(TRANSFORMERS)	
R137A-D	ERDS2TJ6R8	6.8	4	T101A-D	PQLT8E1A	TRANSFORMER	4
R138A-D	ERDS2TJ102	1K	4				
R140A-D	ERDS2TJ822	8.2K	4			(CONNECTORS)	
R141A-D	PQ4R10XJ122	1.2K	4	CN101	PQJS60R96Y	CONNECTOR,60P	1
R142A-D	PQ4R10XF1961	1960	4	CN108	PQJP04A56Y	CONNECTOR,4P	1
R153	PQ4R10XJ152	1.5K	1	CN109	PQJP04A56Y	CONNECTOR,4P	1
R154	PQRD1VJ221	220	1	CN112	PQJP04A56Y	CONNECTOR,4P	1
R155	PQ4R10XJ103	10K	1				
R156	PQ4R10XJ103	10K	1				
R157	PQ4R10XJ103	10K	1				
R158	PQ4R10XJ103	10K	1				
R159	PQ4R10XJ103	10K	1				
R160	PQ4R10XJ103	10K	1				
R165A-D	PQ4R10XF4700	470	4				
R166	PQ4R10XJ000	0	1				
R170	PQ4R10XJ222	2.2K	1				
R171	PQ4R10XJ222	2.2K	1				
R172A-D	PQ4R10XJ000	0	4				
R199A-D	PQ4R10XJ000	0	4				