

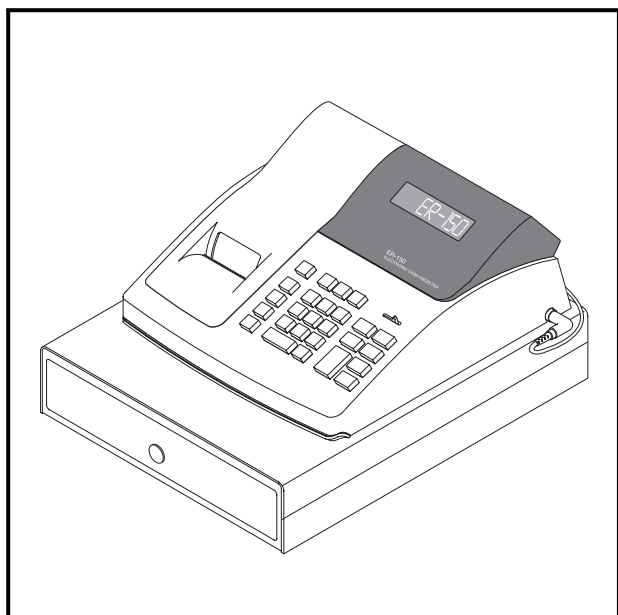
SAM4S

ELECTRONIC CASH REGISTER

ER-150

SERVICE *Manual*

ELECTRONIC CASH REGISTER



C O N T E N T S

1. Precaution Statements
2. Product Specifications
3. Installation and Operation
4. Assembly and Disassembly
5. Exploded View and Part List
6. PCB Layout and Part List
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Overview of this ECR

This service manual provides the technical information for many individual component systems, circuits and gives an analysis of the operations performed by the circuits. If you need more technical information, please contact our service branch or R&D center. Schematics and specifications provide the needed information for the accurate troubleshooting.

All information in this manual is subject to change without prior notice. Therefore, you must check the correspondence of your manual with your machine. No part of this manual may be copied or reproduced in any form or by any means, without the prior written consent of Shin Heung Precision .

Note: Before using this Electronic Cash Register (ECR) for the first time, leave please install the AA-Size Battery. This allows the AA-Size battery, which maintains the memory of the ECR while the power is off, to charge completely.

“Proper disposal of batteries is required. Refer to your local codes for disposal requirements.”

About this Manual

This service manual describes how to perform hardware service maintenance for the SAM4S ER-150 Electronic Cash Register.

Notes

Notes may appear anywhere in the manual. They describe additional information about the item.

Precaution symbols

. Indicates a Safety Precaution that applies to this part component.

. Indicates the part or component is an electro-statically sensitive device. Use caution when handling these parts.

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SAM4S ER-150

Service Manual First edition.

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V1.0

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1 Precaution Statements

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1 Safety Precautions

1. Be sure that all built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including nonmetallic control knobs and compartment covers.
3. Make sure there are no cabinet openings through which people - particularly children - might insert fingers and contact dangerous voltages. Such openings include excessively wide cabinet ventilation slots and improperly fitted covers and drawers.
4. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of the ECR. Unauthorized alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
5. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or over- heating, and correct any potential hazards.
6. Observe the original lead dress, especially near the following areas : sharp edges, and especially the AC and high voltage supplies.
Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
7. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection.
These safety features and the protection they give might be lost if the replacement component differs from the original - even if the replacement is rated for higher voltage, wattage, etc.
Components that are critical for safety are indicated in the circuit diagram by shading, () or ().
Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

CAUTION

Dangerous explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose used batteries according to the manufacturer's instructions.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

1 Precaution Statements

1-2 Servicing Precautions

WARNING: First read the-Safety Precautions-section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.
2. Always unplug the units AC power cord from the AC power source before attempting to:
 - (a) Remove or reinstall any component or assembly
 - (b) Disconnect an electrical plug or connector
 - (c) Connect a test component in parallel with an electrolytic capacitor
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples metal panels and input terminals).
6. Insulation Checking Procedure:

Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of AC plug.

The insulation resistances between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 Mega Ohm.
7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect an instrument's ground lead to the instrument chassis ground before connecting the positive lead ; always remove the instrument's ground lead last.

1-3 Precautions for Electrostatic Sensitive Devices (ESDs)

1. Some semiconductor (solid state) devices are easily damaged by static electricity. Such components are called Electrostatic Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power - this is an electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use Freon-Propelled chemicals. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as anti-static; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

2 Product Specifications

Specifications are correct at the time of printing. Product specifications are subject to change without notice. See below for product specifications.

2-1 General Specification

2-1 A. System Specifications

Item	Description	Remark
AC Power Source	AC120V / 60Hz AC230V / 50Hz	USA Europe
Rating	8W	USA and Europe
Printer	M-42V	Refer to Printer Specification on next page
Battery	AA-Size (*2)	
Processor	SEM100 (64pin)	Masked Processor
Memory	61408	
Display	Front : 9-digits display (Window Display) Rear : 9-digits display (Rear Display)	Optional
Key Board	26 Keys	
Drawer	4C3B,4C4B Weight : 3.3kg Dimensions : 420(L) x 325(W) x 95(H)	Millimeters
Set	Weight : 5.6kg Dimensions : 420(L) x 325(W) x 225(H)	Millimeters

※ Equipment specifications and design are subject to change without notice.

2 Product Specifications

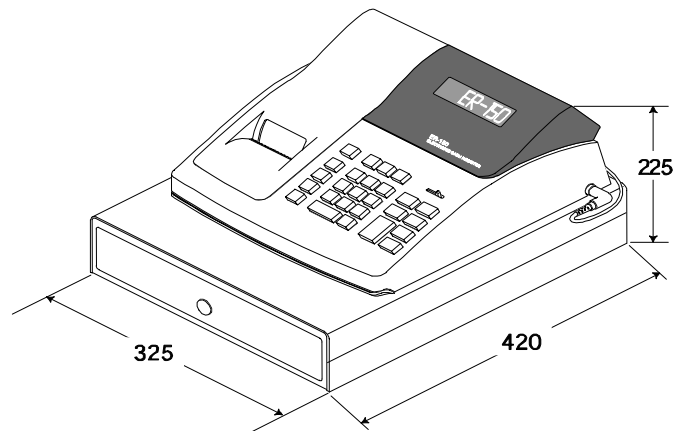
2-1 B. Printer Specifications

Item	Description	Remark
Printing System	Print wheel selecting type serial printer	
Print Column Capacity	19 column max.	
Character Position	System column 13 positions + 1 empty position Numeral column 14 positions	
Character Size	1.6mm (W) x 2.2mm (H)	
Character Space Column Space Line Space	2.1mm between numeric, 2.6mm between numeric and symbol, 2.4mm between symbols 4.6mm	
Printing Speed 19 Columns 7 Columns	Approx. 0.9 Line/sec Approx. 2.2 Line/sec	Average speed At 6.0 Vdc
Printing Paper Roll Type Paper Paper Width Outside Diameter Paper Thickness Basic Weight	Ordinary type 57.5 ± 0.5 mm Φ 80mm or below 0.06 ~ 0.85mm 47 ~ 64 g/m ² (40 ~ 55 kg/1000 sheets/1091 x 788mm)	
Paper Feeding	Quick feed Approx. 8 Line/sec, Paper release mechanism attached.	
Ink Roll Color Life Standard	Purple or Black Refer to the separate "Specifications of Model 42V" IR-40	
Motor Terminal Voltage Mean Current	6.0 (+0.5 / -2.0) Vdc Approx. 0.25A	At 6.0Vdx, 25℃ 19 columns 7 character shift printing
Detector	Mechanical contact Reset pulse signal R, timing pulse signal T, timing auxiliary Pulse signal t	
Trigger Coil (magnet) Terminal Voltage Direct Current Resistance	6.0 (+0.5 / -2.0) Vdc Approx. 20Ω (25℃)	
connection Printer Side	Jumper Wire	
Guaranteed Operating Temperature	0℃ ~ 50℃	
Reliability (MCBF)	700,00 columns	
Overall Dimensions	86mm (W) x 50mm(D) x 19mm (H)	
Weight	Approx. 90g	

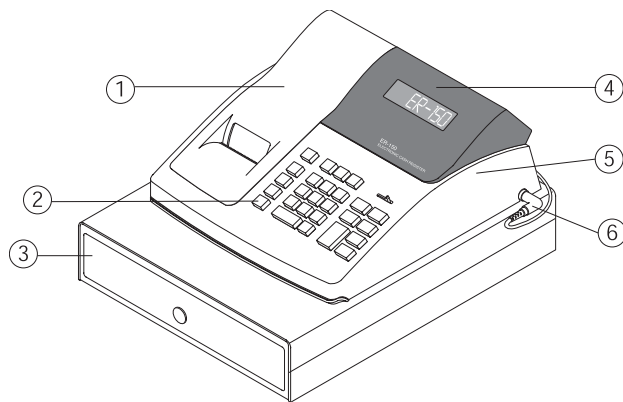
※ Equipment specifications and design are subject to change without notice.

2-2 Appearance

2-2 A. Appearance Dimensions (mm)



2-2 B. ECR Features



- ① Cover Printer
- ② Key Board
- ③ Drawer
- ④ Window display
- ⑤ Case Upper
- ⑥ Power Cord

Memo

3 Installation and Operation

This chapter details the method for installing the ECR system and shows the locations various feature items.

3-1 Installation

3-1 A. System Reset Procedure (ALL CLEAR)

WARNING: You should not do this procedure after installation or battery exchanging. If you do so, all preset data and total sums may be lost.

When first installing the machine, the battery exchanging or other maintenance which performed under the condition that the battery connector is plugged off, the System Reset must be performed before operation.

Plug in, while pressing the and keys in 3 seconds at P mode. Then, ER-150 system will be reset and all data will be cleared.

3-1 B. Battery Insertion and Exchange

WARNING: If you put off this battery while using the machine, it changes the commercial data and values that are preset

Open the Printer cover, you can find a case of battery or its cover at the under of the paper spool. Insert two AA size 1.5V batteries and the cover plate applied by us or your new equivalent batteries according to “+,-” marking. After the battery cover inserted, you should write the date will be exchanged the battery for the maintenance.

3-2 Operation

3-2 A. Mode Switch

The position of the Key in the Node Switch determines the action of the ECR. Table 3-1 shows the various mofes that are available.

Mode	Function
OFF	Operation stop
R	Sales Operation
X	X-level report generation
Z	Z-level report generation
P	Program mode

Table 3-1 ECR Modes

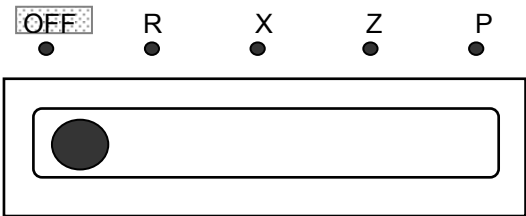


Figure 3-1 Mode Key Switch

3-2 B. Keyboard Matrix

The ER-150 ECR offers keyboard, 26-key, as shown in Table 3-2.

Model	Keys	Type
ER-150	26	Rubber

Table 3-2 Keyboard Types

4 Assembly and Disassembly

This chapter describes the Disassembling and Reassembling procedures for ER-150, Electronic Cash Register.

WARNING: This ECR contains electro-statically sensitive devices.
Use caution when handling any components in this system.

4-1 Disassembly

CAUTION: Disconnect the ECR from the external power source before Disassembly. The following directions are given for the ER-150.

4-1 A. Case-upper Disassemble and M-42V Disassemble Procedure

C.F.) The Chapter 5-1 Total Disassembly.

1. Lift off Cover-printer (A).(Page 5-1)
2. Remove two screws (C-8) on Case-upper(C-9) and pull it front and up, then the Case-upper(C-9) will be open.(Page 5-5)
3. Remove the Power connector (c) on the Main PCB (C-19), and Drawer connector (h) on the Drawer. (Page 5-5, 5-7)
4. Remove the Drawer (D-1). (Page 5-7)
5. Remove the Battery connector (q) on the Main PCB(C-19). (Page 5-5)
6. Remove the Printer connector Harness (g). (Page 5-5)
7. Remove the Spool motor connector (f) on the main PCB. (Page 5-5)
8. Remove the screws (C-22) on the Case-upper(C-9). (Page 5-5)
9. Remove the Plate Main PCB (C-20). (Page 5-5)

4-1 B. Reassemble Procedure

- Reassemble procedures is reverse procedures of the upper 4-1-1 procedure.

Memo

5 Exploded View and Parts List

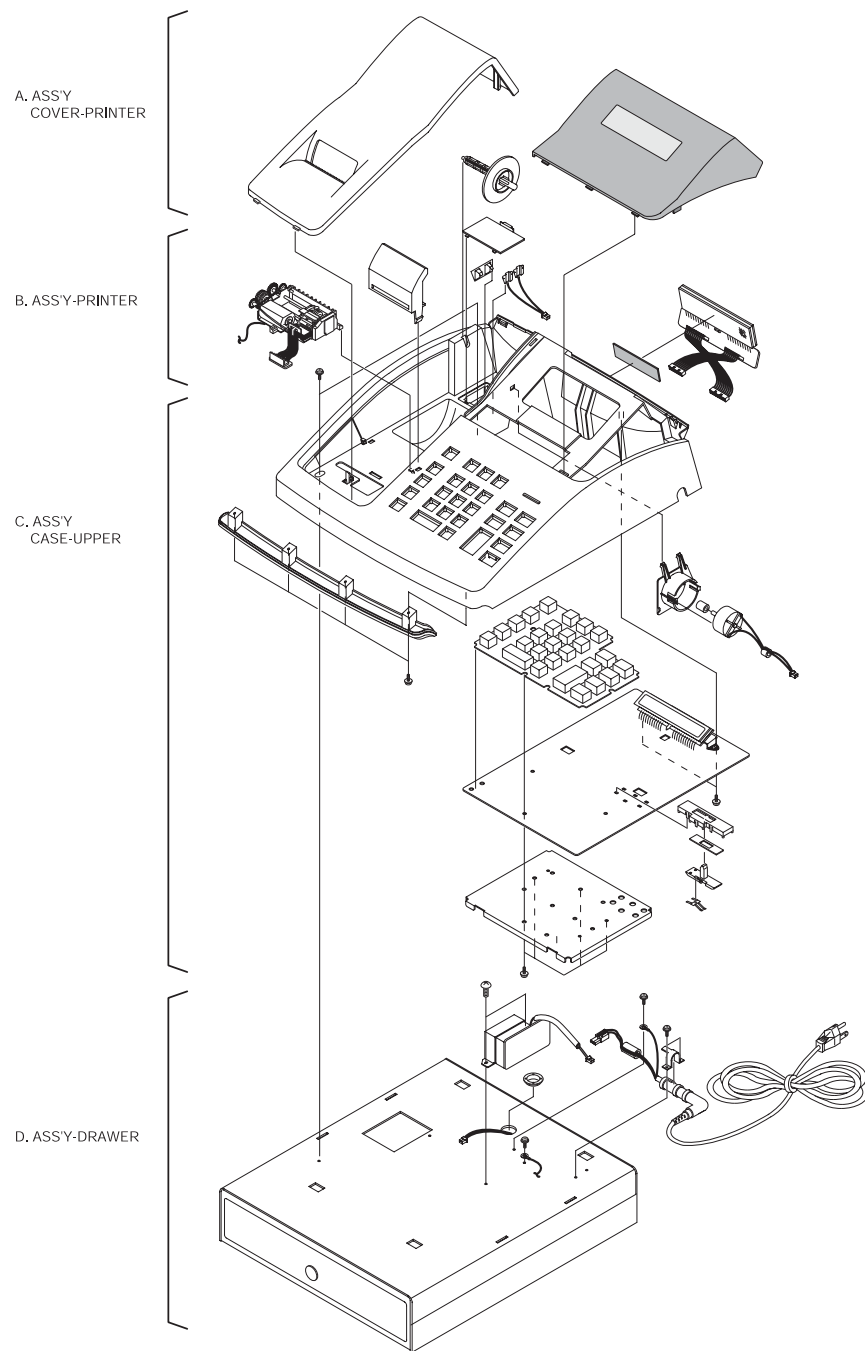


Figure5-1 Total Disassembly

5 Exploded View and Parts List

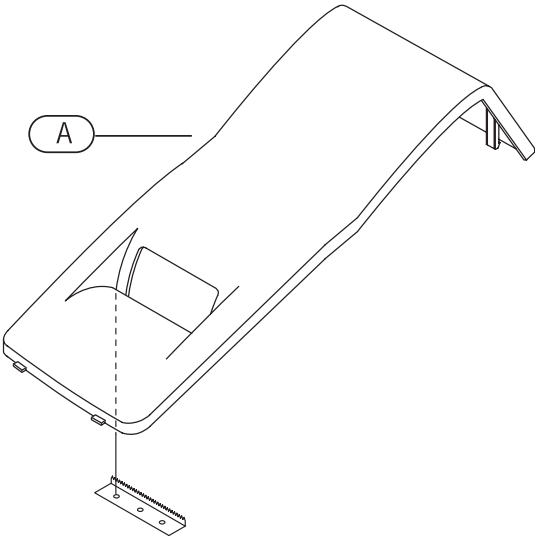


Figure5-2 A. ASS'Y COVER-PRINTER

A. ASS'Y COVER PRINTER

No	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
A	JK97-00924A	MEA COVER-PRINT:ER-150,BASIC,WORLD	1		Y	
	JK70-10320A	IPR-CUTTER PAPER:ER-150,STS304,T0.3	1		N	
	JK72-40928B	PMO-COVER PRINTER:ER-150,SAM4S	1		N	

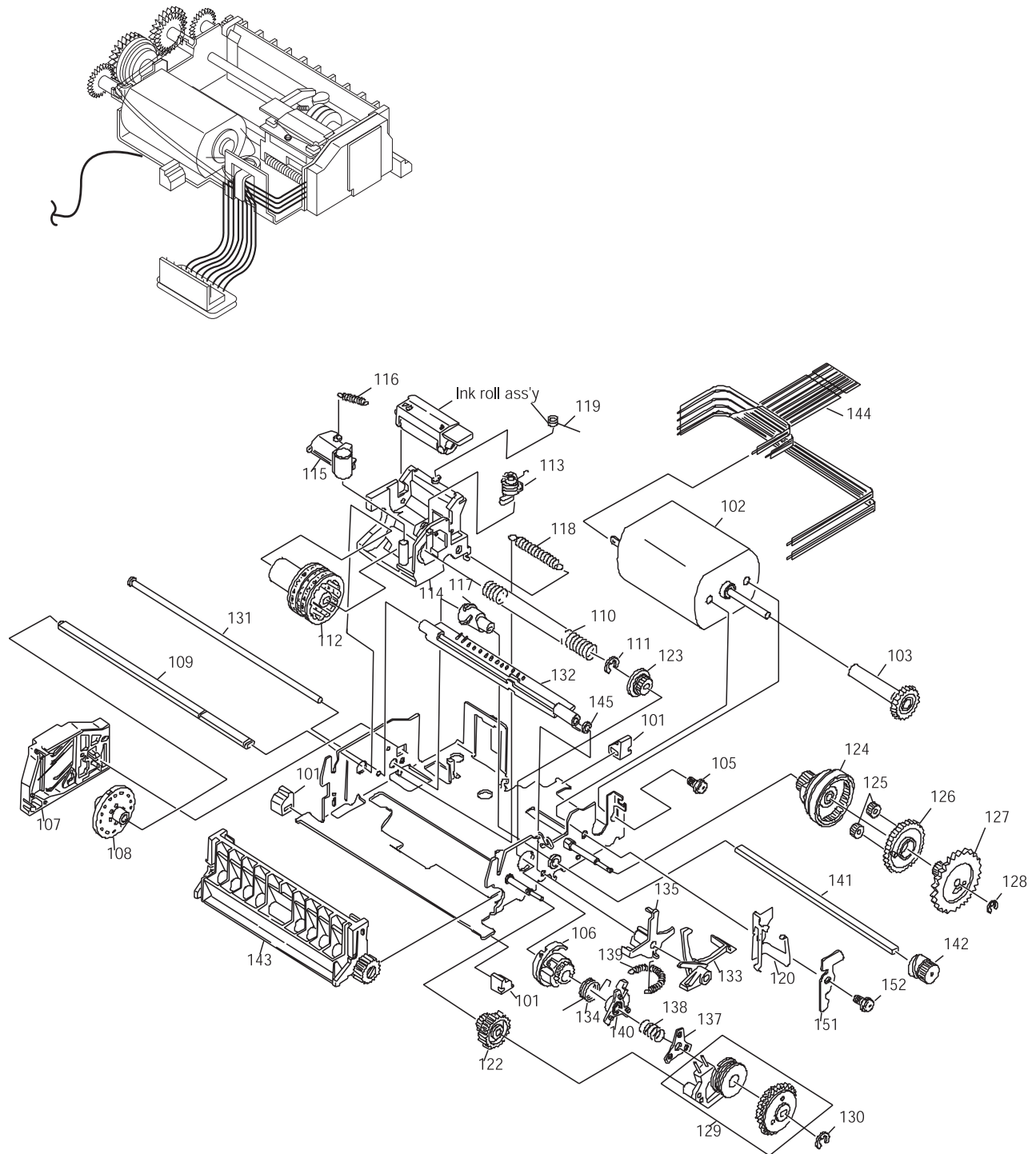


Figure5-3 B. ASS'Y-PRINTER

5 Exploded View and Parts List

B. ASS'Y-PRINTER

No	Part-No	Description / Specification	Q'TY	Design-location	Remark
B	JK59-10120A	UNIT-PRINTER:ER-150,M-42V	1		
101	JK81-10994A	AS-RUBBER FITTING (F801001050)	1		
102	JK81-10995A	AS-MOTOR (F816051010)	1		
103	JK81-10996A	AS-MOTOR GEAR (F817051010)	1		
105	JK81-10997A	AS-CUP SCREW (B040352118)	1		
106	JK81-10998A	AS-P/F DRIVE GEAR ASSY (F815101000)	1		
107	JK81-10999A	AS-DETECTOR ASSY (F815151000)	1		
108	JK81-11000A	AS-DETECTION WHEEL (1024276)	1		
109	JK81-11001A	AS-PRINT WHEEL SHAFT (1017190)	1		
110	JK81-11002A	AS-PRT WHEEL SPRING (F801202020)	1		
111	JK81-11003A	AS-RETAINING RING (B150300311)	1		
112	JK81-11004A	AS-PRINTER-WHEEL ASSY 1-6 (M817001060)	1		
120	JK81-11005A	AS-H/TRAN LEVER ASSY (F815210000)	1		
130	JK81-11006A	AS-CARRIAGE (F817208010)	1		
140	JK81-11007A	AS-HAMMER (F809201020)	1		
150	JK81-11008A	AS-HAMMER RET/SPRING (F808201020)	1		
160	JK81-11009A	AS-PRINT CAM (F817201020)	1		
118	JK81-11010A	AS-CARRIAGE SPRING (F812201020)	1		
119	JK81-11011A	AS-INK ROLL SPRING (F817201010)	1		
120	JK81-11012A	AS-SELE PAWL SPRING (F818209010)	1		
122	JK81-11013A	AS-P/F TRANS GEAR (F815212010)	1		
123	JK81-11014A	AS-P/F RATCHET WHEEL (F801202030)	1		
124	JK81-11015A	AS-PRT CHANGE OVER CAM (F817203020)	1		
125	JK81-11016A	AS-PLANET GEAR (F801206020)	1		
126	JK81-11017A	AS-SEL DRIVE GEAR (F801206030)	1		
127	JK81-11018A	AS-REDUCTION GEAR (F817203010)	1		
128	JK81-11019A	AS-RETAINING RING (B150300212)	1		
129	JK81-11020A	AS-COIL S/GEAR ASSY (1041872)	1		
130	JK81-11021A	AS-RETAINING RING (B150300311)	1		
131	JK81-11022A	AS-POSITIONING SHAFT (F806206010)	1		
132	JK81-11023A	AS-POSITIONING PLATE (F808205010)	1		
133	JK81-11024A	AS-SELECTING RATCHET (F804204010)	1		
134	JK81-11025A	AS-TRIGGER L/SPRING (F803204020)	1		
135	JK81-11026A	AS-RETURN LEVER (F815207010)	1		
137	JK81-11027A	AS-TRIGGER PLATE (1017206)	1		
138	JK81-11028A	AS-TRIGGER PLATE SPR (F801205110)	1		
139	JK81-11029A	AS-RETURN LEVER SPR (F810205020)	1		
140	JK81-11030A	AS-TRIGGER LEVER (F801205060)	1		
141	JK81-11031A	AS-PRINT SHAFT (1017209)	1		
142	JK81-11032A	AS-CARRIAGE F/GEAR (F801211020)	1		
143	JK81-11033A	AS-PLATEN ASSY (1024287)	1		
144	JK81-11034A	AS-JUMPER WIRE (1018148)	1		
145	JK81-11035A	AS-PLAIN WASHER (F817210010)	1		
151	JK81-11036A	AS-S/PAWL SPR HOLDER (F818202020)	1		
152	JK81-11037A	AS-CUP SCREW (B040351111)	1		

Note: () means the Printer Manufacture's Parts List (EPSON's Parts List)

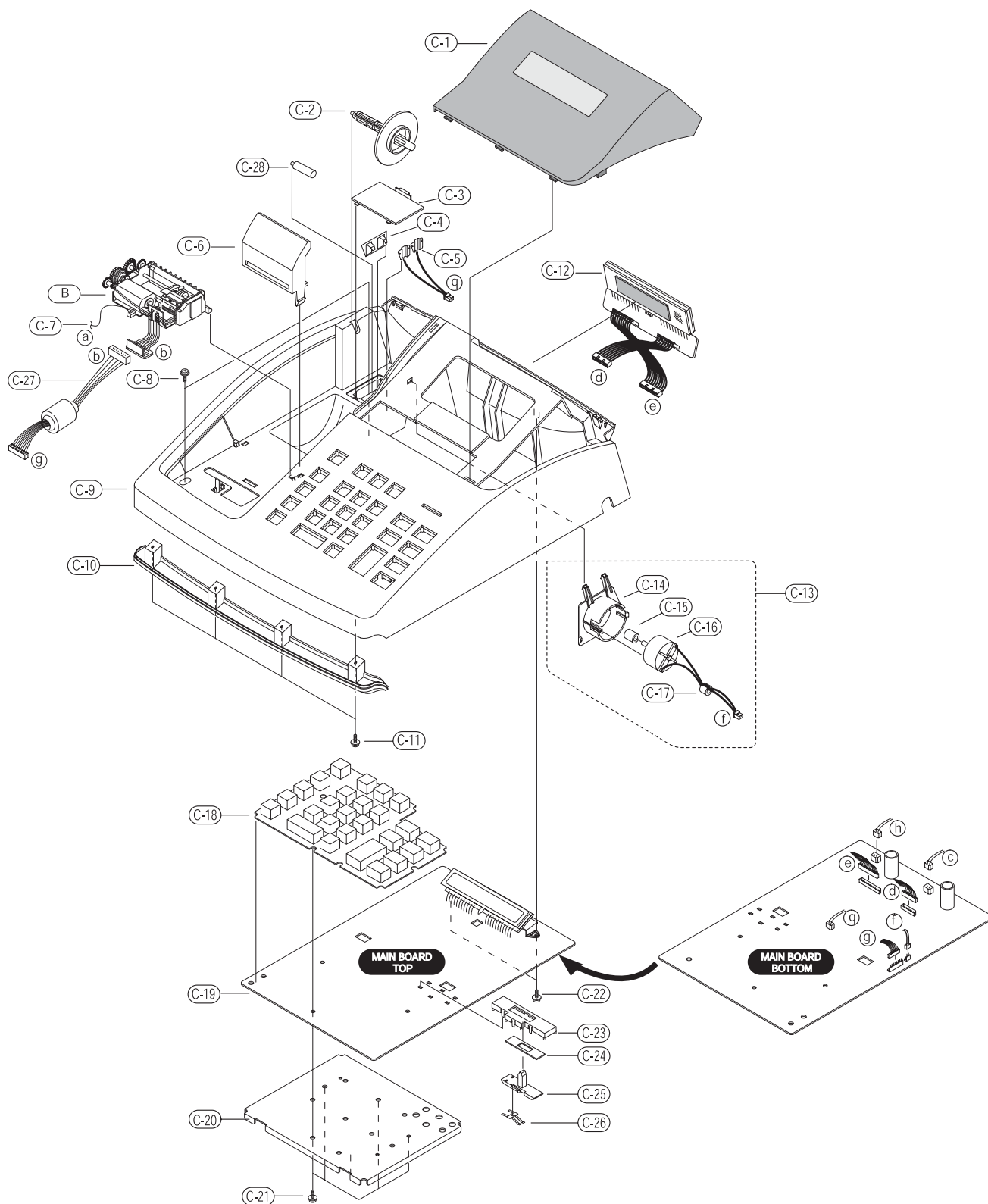


Figure5-4 C. ASS'Y CASE-UPPER

5 Exploded View and Parts List

C. ASS'Y CASE-UPPER

No	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
C-1	JK72-40929A	PMO-WINDOW DISPLAY:ER-150,PC	1		Y	
C-2	JK72-40266A	PMO-PULLEY WINDING	1		Y	
C-3	JK72-40931A	PMO-CASE BATTERY	1		Y	
C-4	JK70-10325A	IPR-PLATE BATTERY/A: STS304	1		Y	
C-5	JK70-10326A	IPR-PLATE BATTERY/B: STS304	1		Y	
C-6	JK72-40930A	PMO-GUIDE PAPER	1		Y	
C-7	JK39-40302Z	CBF HARNESS:-,UL 1015,290,GRN	1		Y	
C-8	6003-001149	SCREW-TAPTITE:PW,+,S,M4,L10,ZPC(YEL)	2	C/UPPER+DRAWER	Y	
C-9	JK72-40926A	PMO-CASE UPPER:ER-150	1		Y	
C-10	JK72-40927A	PMO-BASE DUMMY:ER-150	1		Y	
C-11	6002-000175	SCREW-TAPPING:PW,+,2,M3,L8,ZPC(YEL)	4	C/UPPER+BASE DUMMY	Y	
C-12	JK92-01021A	PBA ETC-SUB REAR-DISPLAY	1		Y	OPTION
C-13	JK96-00937A	PBA ETC-SUB(REAR DSP):ER-150R	1		Y	
C-14	JK72-40932A	PMO-HOLDER MOTOR:ER-150	1		Y	
C-15	JK73-30200A	RCT-MOTOR:ER-150,URETAN, BLK	1		Y	
C-16	3101-001071	MOTOR-DC:3270rpm,16g.cm,9V,130mA	1		Y	
C-17	JK39-40303B	CBF HARNESS:-,UL 1061,30/100,BLK/PPL	1		Y	
C-18	JK73-20901A	REX-KEY MULT:ER-150,SILICON,ENGLISH	1		Y	
	JK73-20901B	REX-KEY MULT:ER-150,GERMANY	1		Y	
C-19	JK92-00924A	PBA MAIN-BOARD:ER-150,USA,120V/60Hz	1		Y	USA
	JK92-00926A	PBA MAIN-BOARD:ER-150,EUROPE,230V/50Hz	1		Y	EUROPE
	JK92-01018A	PBA MAIN-BOARD:ER-150R,R-DIS,230V/50Hz	1		Y	R-DISPLAY
C-20	JK70-10374A	IPR-PLATE MAIN/PCB:ER-15,SBHG-1,T0.6	1		Y	
C-21	6002-000175	SCREW-TAPPING:PW,+,2,M3,L8,ZPC(YEL)	4	C/UPPER+M/PCB+PLATE MAIN	Y	
C-22	6002-000174	SCREW-TAPPING:PW,+,2,M3,L10,ZPC(YEL)	2	C/UPPER+M/PCB	Y	
C-23	JK72-40302A	PMO-HOLDER SWITCH	1		Y	
C-24	JK72-10902A	PPR-COVER SHEET	1		Y	
C-25	3408-001036	SWITCH-SLIDE:ER-150	1		Y	
C-26	JK70-10375A	IPR-PLATE TERMINAL: STS304	1		Y	
C-27	JK39-40016A	CBF HARNESS:ER-100,-,UL1007,120MM	1		Y	
C-28	4301-000120	BATTERY-MN:AA-SIZE,1.5V	2		N	

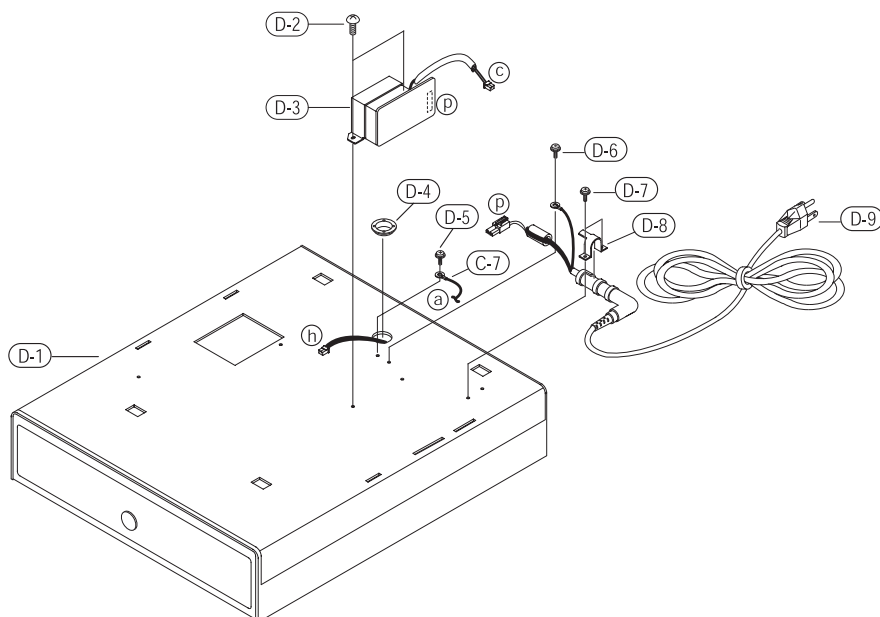


Figure5-5 D. ASS'Y-DRAWER

D. ASS'Y DRAWER

No	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
D-1	JK75-00020A	MEC DRAWER:B43LC(4BILL,3COIN,LOCK)	1		Y	
	JK75-00022A	MEC DRAWER:B43NC(4BILL,3COIN,NO-LOCK)	1		Y	
	JK75-00023A	MEC DRAWER:B43LC(4BILL,4COIN,LOCK)	1		Y	
	JK75-00024A	MEC DRAWER:B44NC(4BILL,4COIN,NO-LOCK)	1		Y	
D-2	6003-000221	SCREW-TAPTITE:PW,+,S,M4,L8,ZPC(YEL)	1	DRAWER+POWER-TRANS	Y	
D-3	JK26-30104C	TRANS POWER:ER-150,110/60Hz	1		Y	
	JK26-30104D	TRANS POWER:ER-150,220/50Hz	1		Y	
D-4	JK72-40345A	PMO-BUSHING DRAWER	1		Y	
D-5	6002-000175	SCREW-TAPPING:PW,+,2,M3,L8,ZPC(YEL)		PRINT GND + DRAWER	Y	
D-6	6006-000199	SCREW-ASS'Y TAPT:WT,BH,+,M4,L8,ZPC(YEL)	1	G/PLATE + P/CORD GND WIRE	Y	
D-7	6003-000168	SCREW-TAPTITE:PH,+,B,M3,L8,ZPC(YEL)		DRAWER + HOLDER CORD	Y	
D-8	JK70-10312A	IPR-HOLDER CORD: SBHG-1,T1			Y	
D-9	JK39-10301D	POWER-CORD;EUROPE	1		Y	
	JK39-10301T	POWER-CORD;AUSTRALIA	1		Y	
	JK39-10301U	POWER-CORD;USA	1		Y	
	JK39-10301X	POWER-CORD;UK	1		Y	

5 Exploded View and Parts List

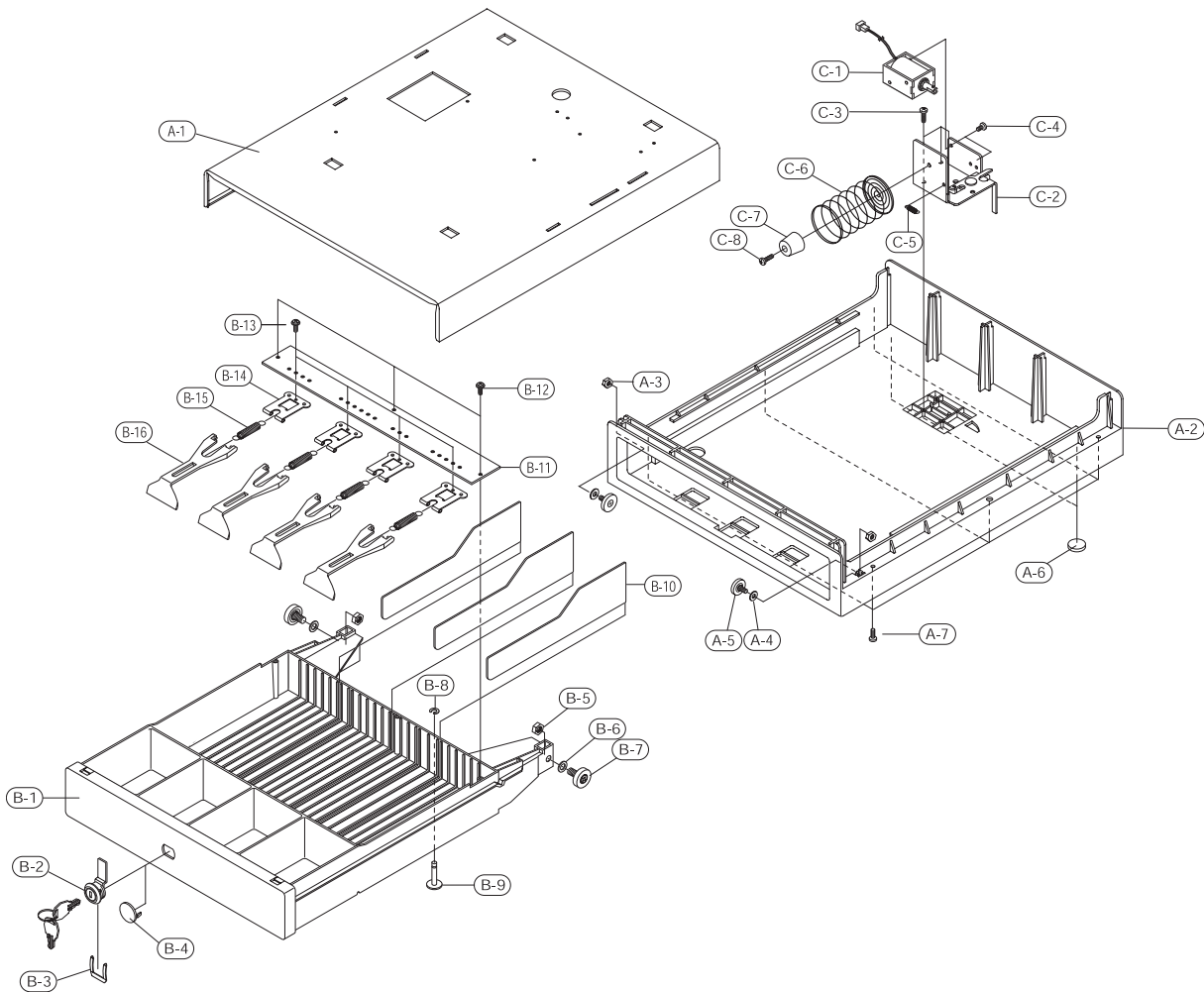


Figure5-6 DRAWER EXPLODED VIEW

A. ASS'Y COVER

No	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
A-1	JK70-10406A	IPR-HOUSING DRAWER	1		N	
A-2	JK72-40375B	PMO-COVER BOTTOM	1		Y	
A-3	6021-000225	NUT-HEXAGON; 2C,M6,ZPC(YEL),SM20C	2		Y	
A-4	6031-000243	WASHER-PLAIN; M5,ID5.3,OD10,T1,ZPC(YEL)	2		Y	
A-5	JK75-10386A	MEC-ROLLER; DRAWER,DR-19-B1/PI19	2		Y	
A-6	JK61-40201A	FOOT; B-DRAWER,NR,-,BLK	2		Y	
A-7	6002-000175	SCREW-TAPPING	6		Y	

B. ASS'Y TRAY-TILL

No	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
B-1	JK72-40242B	PMO-BILL_COIN TRAY; B-TYPE,HIPS,IVR,HB	1		Y	
B-2	JK75-10389A	MEC-LOCK; DRAWER	1		Y	WITH LOCK
B-3	JK70-10323A	IPR-PLATE CLIP; DRAWER,SWP,T0.5	1		Y	WITH LOCK
B-4	JK72-40241B	PMO-DRAWER BUSHING KEY	1		Y	WITHOUT LOCK
B-5	6021-000225	NUT-HEXAGON; 2C,M6,ZPC(YEL),SM20C	2		Y	
B-6	6031-000243	WASHER-PLAIN; M5,ID5.3,OD10,T1,ZPC(YEL)	2		Y	
B-7	JK75-10386A	MEC-ROLLER; DRAWER,DR-19-B1/PI19	2		Y	
B-8	6044-000124	RING-E; ID3,OD7,TO.6,ZPC(BLK)	1		Y	
B-9	JK70-40302A	ICT-SHAFT PIN; A-TYPE,SUM45C,D5	1		Y	
B-10	JK72-40240B	PMO-BILL_COIN PARTITION; B-TYPE,HIPS,IVR,HB	3		Y	
B-11	JK70-10307A	IPR-PLATE HOLDER; B-TYPE,SBHG-1,T1	1		Y	
B-12	6002-000193	SCREW-TAPPING; RH,+,2S,M3,L6,NI PLT,SM20C	3		Y	
B-13	6002-001078	SCREW-TAPPING; PWH,+,B,M3,L5,ZPC(YEL)	4		Y	
B-14	JK70-10314A	IPR-HOLDER LEVER; A-TYPE,SPCC,T1.2	4		Y	
B-15	6107-000134	SPRING-ES; PI0.65,D4.35,L31.7	4		Y	
B-16	JK72-40267A	PMO-LEVER PRESS; DRADWE-A,POM,BLK	4		Y	

C. ASS'Y LOCK

No	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
C-1	JK27-10500A	SOLENOID-DC	1		Y	
C-2	JK75-10387A	MEC-LOCK LEVER; DRAWER-A,SECCT2.0,	1		Y	
C-3	6002-000201	SCREW-TAPPING; RH,+,2S,M4,L12,ZPC(YEL)	3		Y	
C-4	6003-000157	SCREW-TAPTITE; PH,+,B,M2,L5,ZPC(YEL)	2		Y	
C-5	6107-000126	SPRING-ES; PI0.35,D2.84,L11.3	1		Y	
C-6	JK61-70101A	SPRING-PUSH; SILVERPI 41.5,74	1		Y	
C-7	JK73-20210A	REX-BUMPER; DRAWER,NR,-,BLK	1		Y	
C-8	6001-000702	SCREW-MACHINE; TH,+,M4,L15,NI PLT,SM20C	1		Y	

Memo

6 PCB Layout and Part List

6-1 Main PCB

No	Part-No	Description / Specification	Q'TY	Design Location	Serviceable	Remarks
-	JK92-00926A	PBA MAIN-BOARD:ER-150,BASIC,230V/50Hz	1		Y	STANDARD
-	JK92-01017A	PBA MAIN-BOARD:ER-150R,R-DIS,120V/60Hz	1		Y	REAR DISPLAY
-	JK92-01018A	PBA MAIN-BOARD:ER-150R,R-DIS,230V/50Hz	1		Y	REAR DISPLAY
-	JK96-00924A	PBA MAIN-BOARD:ER-150,USA,120V/60Hz	1		Y	USA
-	0402-000300	DIODE-BRIDGE:2KBP02M,200V,2A,SIP-4,BK	1	D1	Y	
-	0502-000355	TR-POWER:TIP31C,NPN,2W,TO-220AB,BK,10-5	1	Q11	Y	
-	0803-001211	IC-TTL:74LS14,SCHMITT INVERTER,DIP,14P,3	1	U2	Y	
-	1209-001175	IC-ETC,LINEAR:LB1268,PLASTIC,5V	1	U3	Y	
-	2011-000229	R-NETWORK:150KOHM,5%,1/8W,A,SIP,9P,BK	1	R-ARRAY	Y	
-	2201-000119	C-CERAMIC,DISC:100nF,+80-20%,50V,Y5V,TP,	1	C26	Y	
-	2202-000579	C-CERAMIC,MLC-AXIAL:100nF,+80-20%,50V,Z5	1	C104	Y	
-	2301-000010	C-FILM,PEF:100nF,5%,100V,TP,11.5x12.5mm,	1	C11	Y	
-	2401-000131	C-AL:1000uF,20%,16V,GP,TP,10x20,5	1	C5	Y	
-	2401-001311	C-AL:4700uF,20%,35V,GP,BK,-,-	2	C1,C2	Y	
-	2503-001030	C-NETWORK:100PFX8,20%,50V,X7R	1	C-ARRAY	Y	
-	2801-000309	CRYSTAL-UNIT:4MHz,50ppm,28-AAM,32pF,100o	1	X1	Y	
-	3002-000175	BUZZER-PIEZO:90dB,12V,12MA,3.8KHz,BK	1	BUZZER	Y	
-	3408-001036	SWITCH-SLIDE:ER-150	1	SLIDE SWITCH	Y	
-	JK70-10375A	IPR-PLATE TERMINAL:ER-100,STS304,T0.16,-	1	SLIDE SWITCH	Y	
-	JK72-40302A	PMO-HOLDER SWITCH:ER-100,ABS,IVR,V0,-	1	SLIDE SWITCH	Y	
-	JK72-10902A	PPR-COVER SHEET:ER-150,PC,BLACK,T0.5,-	1	SLIDE SWITCH	Y	
-	3601-000246	FUSE-CARTRIDGE:250V,2A,TIME-LAG,GLASS,5.	1	250V 2A	Y	
-	3711-000034	CONNECTOR-HEADER:BOX,2P,1R,2.5mm,STRAIGH	1	BATTERY,2P,BLK	Y	
-	3711-000131	CONNECTOR-HEADER:1WALL,11P,1R,2.5mm,STRA	1	REAR DISP,11P,BROWN	Y	
-	3711-000161	CONNECTOR-HEADER:1WALL,2P,1R,2.5mm,STRAI	2	DRA,MOTOR,2P,BROWN	Y	
-	3711-000334	CONNECTOR-HEADER:1WALL,8P,1R,2.5mm,STRAI	2	PRINTER,REAR DISP	Y	
-	3711-003969	CONNECTOR-HEADER:BOX,2P,1R,2.5mm,STRAIGH	1	POWER,2P,IVORY	Y	
-	JK07-10301E	DISPLAY VFD:ER-100,FG97D6GBL,BLUE,-,-	1	9 DIGIT	Y	
-	JK73-10208A	RPR-PAD:ECR,SPONGE,-,BLK	1	DIGITRON	Y	
-	JK70-10906A	IPR-BRK'T DIGITRON:ER-150,SECC,T0.8,-	1	DIGITRON	Y	
-	JK09-10001A	IC MICOM:ER-100(USA),61408,SMD,60P	1	U1(88) USA	Y	
-	JK09-10001B	IC MICOM:ER-100(EUROPE),61408,SMD,60P	1	U1(09) EUROPE	Y	
-	JK26-30050A	TRANS POWER:ER-100,6.6V/5V/30V,-	1	CONVT	Y	
-	0401-000005	DIODE-SWITCHING:1N4148,100V,200mA,DO-35,	10	D11~D20	Y	
-	0402-000129	DIODE-RECTIFIER:1N4003,200V,1A,DO-41,TP	5	D3,D4,D7,D8,D10	Y	
-	0403-000004	DIODE-ZENER:UZ12BM,12V,11.6-12.4V,500mW,	1	D5	Y	
-	0403-000161	DIODE-ZENER:1N4751,30V,5%,1000MW,DO-41,T	1	D6	Y	
-	0403-000351	DIODE-ZENER:UZ4.7B,4.4-5.0V,500mW,DO-35,	1	D9	Y	
-	0501-000399	TR-SMALL SIGNAL:KSC945-G,NPN,250mW,TO-92	9	Q1~Q5,Q7~Q10	Y	
-	0502-000288	TR-POWER:KSD288,NPN,25W,TO-220,-,120-24	1	Q6	Y	
-	2001-000021	R-CARBON:27OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R35	Y	
-	2001-000021	R-CARBON:27OHM,5%,1/4W,AA,TP,2.4X6.4MM	2	R2,R31	Y	
-	2001-000036	R-CARBON:330OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R4	Y	
-	2001-000042	R-CARBON:1KOHM,5%,1/4W,AA,TP,2.4X6.4MM	5	R1,R3,R11,R12,R15	Y	
-	2001-000045	R-CARBON:1.8KOHM,5%,1/4W,AA,TP,2.4X6.4MM	3	R13,R14,R16	Y	

6 PCB Layout and Part List

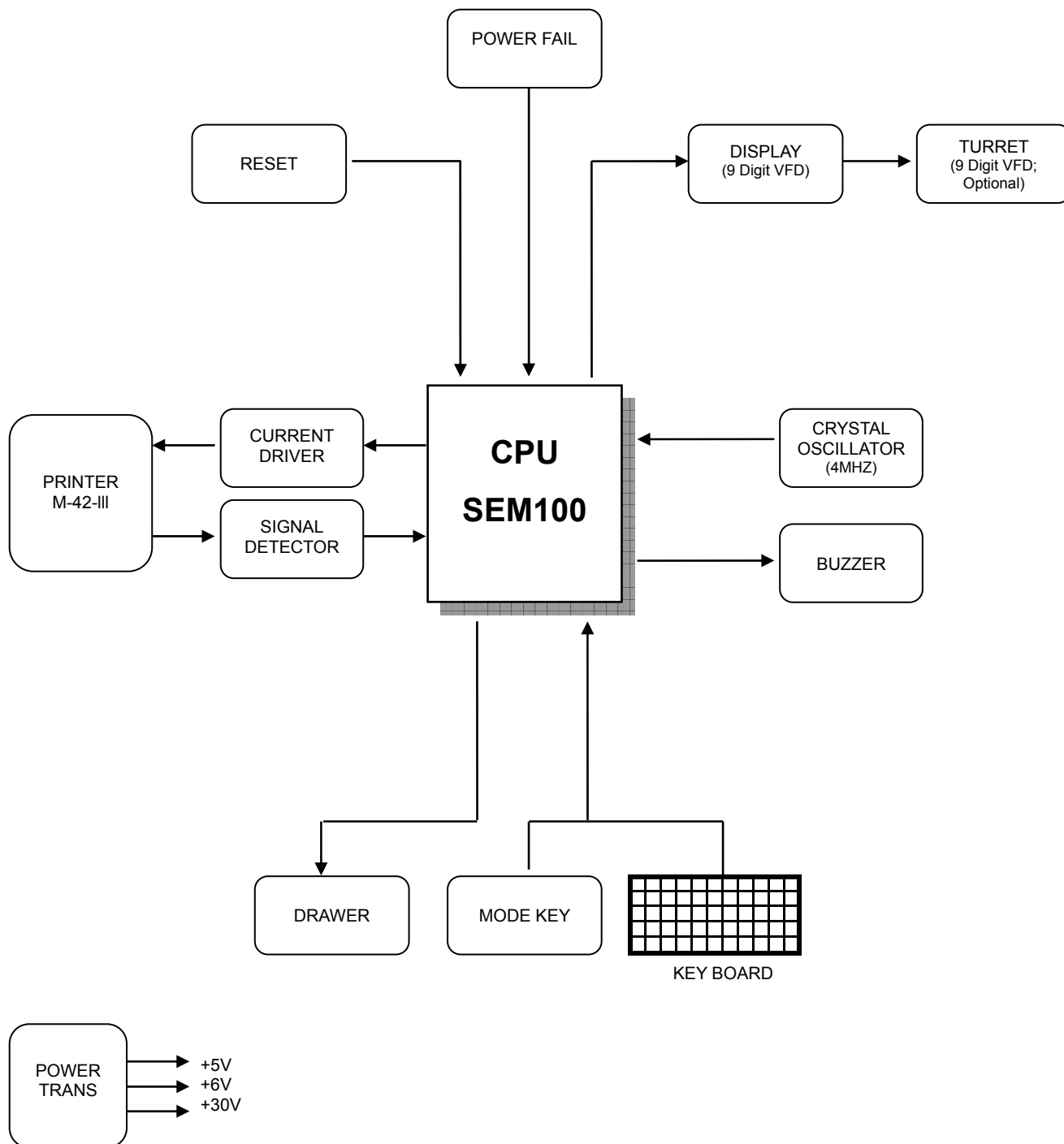
No	Part-No	Description / Specification	Q'TY	Design Location	Serviceable	Remarks
-	2001-000047	R-CARBON:2.2KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R29	Y	
-	2001-000055	R-CARBON:4.7KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R27	Y	
-	2001-000058	R-CARBON:5.6KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R20	Y	
-	2001-000063	R-CARBON:7.5KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R17	Y	
-	2001-000065	R-CARBON:10KOHM,5%,1/4W,AA,TP,2.4X6.4MM	5	R8,R9,R23,R24,R30	Y	
-	2001-000076	R-CARBON:47KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R25	Y	
-	2001-000084	R-CARBON:100KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R28	Y	
-	2001-000119	R-CARBON:680OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R22	Y	
-	2001-000374	R-CARBON:150OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R40	Y	
-	2001-000432	R-CARBON:1MOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R6	Y	
-	2001-000482	R-CARBON:200KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R21	Y	
-	2001-000575	R-CARBON:2KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R26	Y	
-	2001-000835	R-CARBON:51KOHM,5%,1/4W,AA,TP,2.4X6.4MM	1	R7	Y	
-	2001-000906	R-CARBON:62KOHM,5%,1/4W,AA,TP,2.4X6.4MM	3	R5,R18,R19	Y	
-	2001-001144	R-CARBON(S):4.7KOHM,5%,1/2W,AA,TP,2.4X6.	1	R10	Y	
-	2201-000119	C-CERAMIC,DISC:100nF,+80-20%,50V,Y5V,TP,	7	C3,C9,C10,C16,C20,C22,C27	Y	
-	2201-000162	C-CERAMIC,DISC:10nF,+80-20%,50V,Y5V,TP,7	7	C13-15,C19,C23-25	Y	
-	2201-000198	C-CERAMIC,DISC:0.01nF,0.5pF,50V,SL,TP,4x	2	C17,C18	Y	
-	2301-000010	C-FILM,PEF:100nF,5%,100V,TP,11.5x12.5mm,	1	C12	Y	
-	2401-000603	C-AL:1uF,20%,50V,GP,TP,5x11,5	1	C8	Y	
-	2401-001363	C-AL:470uF,20%,16V,GP,TP,10x12.5,5	1	C7	Y	
-	2401-002075	C-AL:4.7uF,20%,50V,GP,TP,5x11,5	1	C4	Y	
-	2401-002300	C-AL:47uF,20%,50V,GP,TP,6.3x11,5	1	C6	Y	
-	3301-000299	CORE-FERRITE BEAD:AA,3.6x5.0mm,550,3100G	5	J8,11,J13~15	Y	
-	3602-000001	FUSE-CLIP:-,30mohm	2	FUSE1	Y	
-	JC39-40511A	CBF HARNESS:ML-80,JUMPER,AWG22,52mm,SILV	31	J1~4,6,7,9,10,12,16~21,23~34,36~39	Y	
-	JK41-10301T	PCB-MAIN:ER-100,,,T1.6,163X247X1.6	1	MAIN PCB	Y	

6-2 Transformer PCB

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remarks
-	JK26-30104C	TRANS-POWER;ER-150,110V/117V,60Hz	1		Y	
-	JK26-30104D	TRANS-POWER;ER-150,220V/240V,50Hz	1		Y	

7 Block Diagram

7-1 Block Diagram



7-2 Power Block

7-2 A. Power Circuit

This machine has two different power sources, one as a power. Circuit and the other is a battery source. The Power circuit generates the five levels DC voltage sources. There are 5.3V for the logic, AC 4V and DC -30V for the VFD driving, +6V for the drawer opening control circuit. The two AA size batteries apply +3V to the Back Up circuit.

7-2 A-(a) VRAW (+6)

The VRAW voltage is used to the source voltage of the drawer driving circuit, and the input voltages of the other different power sources. The AC 5.6V is rectified by the Bridge diode rectifier 2KBP02 and it is regulated by the Capacitor 4700uF.

7-2 A-(b) VPR (+5.2V)

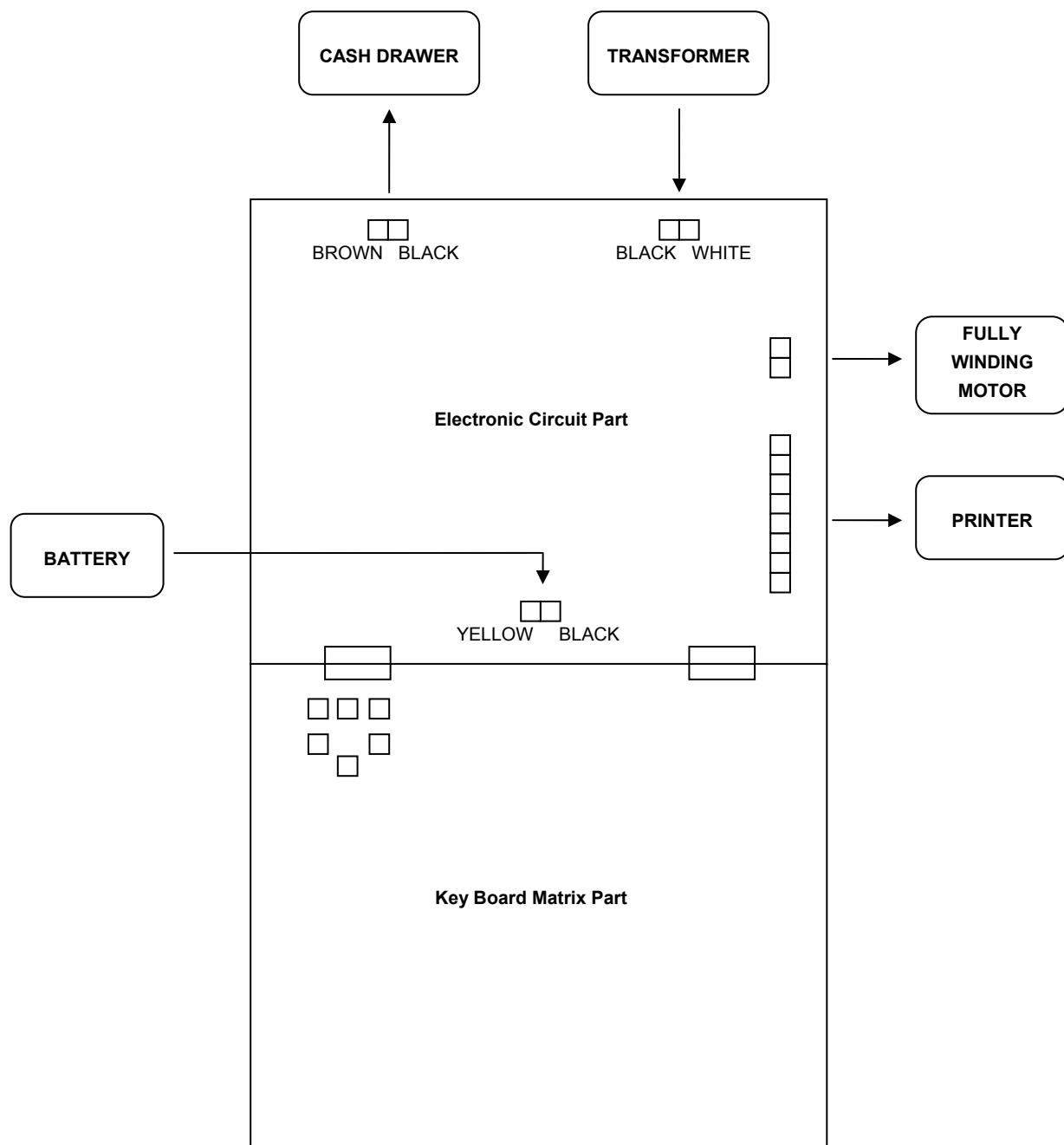
This is the source voltage of the printer, Epson Model-42III. The most parts of VRAW inputs the printer driving circuit through the diode 1N4001, is regulated by the capacitor 25V 4700uF, and it inputs the DC-DC converter circuit.

7-2 A-(c) VF1, VF2, VLG, VDSP

These voltages are generated by the DC-DC converter circuit. The VRAW energy flows into the capacitor C2 through the diode 1N4001, is regulated by the capacitor 25V 4700uF, and it inputs the DC-DC converter circuit.

8 Wiring Diagram

8-1 Main PCB



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9-1



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Use this page to record any special servicing information such as Service Bulletins or Supplements.
When possible, record changes to Code numbers directly on the actual Parts List.
Always records Service Bulletin numbers and Application Dates on this log to ensure that your data is always as current as possible.

SAM4S

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