

CITIZEN

Service Manual

Model: CBM-920

Dot Matrix Printer

Rev. 1.00 Newly Issued on May. 25. 1998

**Japan CBM Corporation
Information Systems Div.**

INTRODUCTION

This manual describes the disassembly, reassembly, and maintenance procedures of the dot impact printer CBM920. It is intended for field maintenance men.

FEATURES

The dot impact printer CBM920, allowed to be built in a rack, etc. is widely available for various data communication terminals, POS terminals, measuring instrument terminals, and so on.

This printer is designed small, light-weight, provided with abundant functions, and available for a wide range of applications.

- (1) Small rack built-in type dot matrix printer
- (2) Light weight
- (3) High-speed printing
- (4) Paper end function
- (5) Auto loading function
- (6) Complies with the RS-232C and CENTRONICS
- (7) 24 or 40 printing columns
- (8) Abundant initial setting functions by the external switches

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1. HANDLING AND MAINTENANCE OF PRINTER

See the Instruction Manual coming with the printer body.

2. SPECIFICATIONS

2.1 Basic Specifications

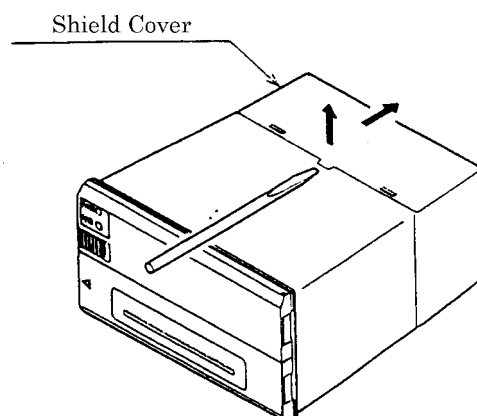
Item	CBM-920-24**	CBM-920-40**
Printing Method	Dot matrix	
Printing Direction	Unidirectional printing (Erect/inverted characters)	
Character Configuration	(5+1)×8	(4+0.5)×8
Number of Digits	24 digits: 144 dots/line	40 digits: 180 dots/line
Printing Speed	Approx. 2.5 lines/sec.	Approx. 1.8 lines/sec.
Character Size	1.62×2.4mm	1.08×2.4mm
Line Spacing	3.52mm	
Printing Paper	Rolled paper: 57.5 +/- 0.5(W) x 50(D) mm Core inner diameter: 12 +/- 1 mm	
Interface	Serial interface(RS-232C) or parallel interface(CENTRONICS)	
Input Buffer	2 KB	
Paper Near End Detection	Stops a data input as the printing paper is running out. Prints the data in the buffer and stops.	
Paper End Detection	Stops printing when the printing paper has run out.	
Auto Loading	If new paper is set into the paper inlet, it will be fed automatically.	
International Character Code	Capable of setting one out of 8 countries with the DIP switch. (Japanese, U.S., French, German, British, Italian, Spanish, Danish) Capable of setting one of the above plus another one(Swedish) by setting a command.	
Ink Ribbon	Purple	
Supply Voltage	5 V DC +/- 5 % (Voltage at print) Approx. 2.5 A, Approx. 4 A at peak(10 % duty) Use the external power source	
Mean Power Consumption	When printing: Approx. 7 VA When not printing: Approx. 0.7 VA	
Weight	Approx. 500 g (Fittings included)	
Outer Dimensions	115(W)×65(H)×119(D)mm	
Mounting Hole Dimensions	109(W)×62(H) $\begin{matrix} +0 \\ -0.5\text{mm} \end{matrix}$	
Operating Temperature	0 to 40°C	
Storage Temperature	-20 to 60°C	

3. DISASSEMBLY AND REASSEMBLY

3-1 Disassembly Procedure

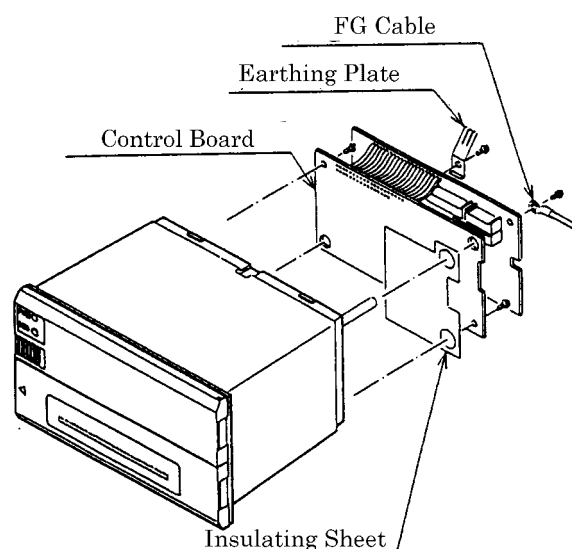
1. Remove a shield cover.

- (1) Insert a regular screwdriver into a slot in the top(or bottom) of the shield cover.
- (2) Raising the end of the regular screwdriver, remove the shield cover.



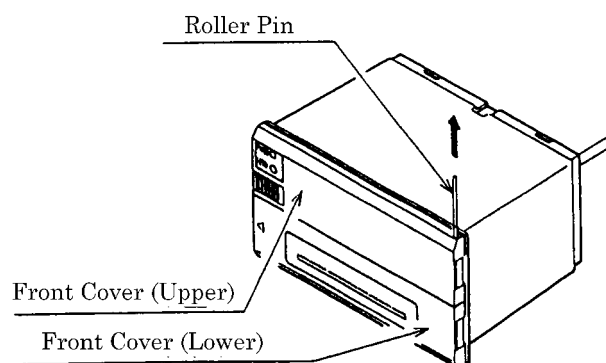
2. Remove a control board.

- (1) Using a Phillips screwdriver, loosen an earthing plate setscrew(PHT, M2.6 X 8) and FG cable setscrew(PHT, M2.6 X 8).
- (2) Using the Phillips screwdriver, loosen two screws(M2.6 x 8) fixing an inner board.
- (3) Disconnect a connected from the board.
- (4) Remove an insulating sheet.



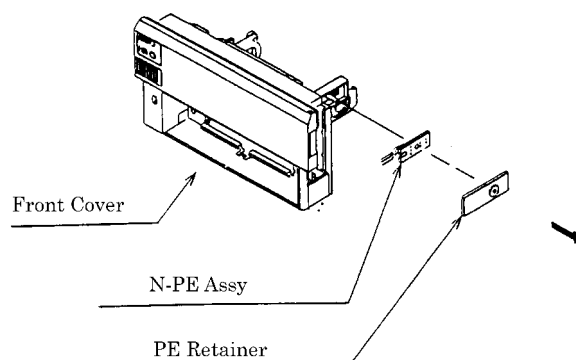
3. Remove the front covers(upper and lower).

- (1) Push out a roller pin from the lower front cover(where the printing paper comes out).
- (2) Paying attention to a harness projecting from the front cover, remove the front cover.



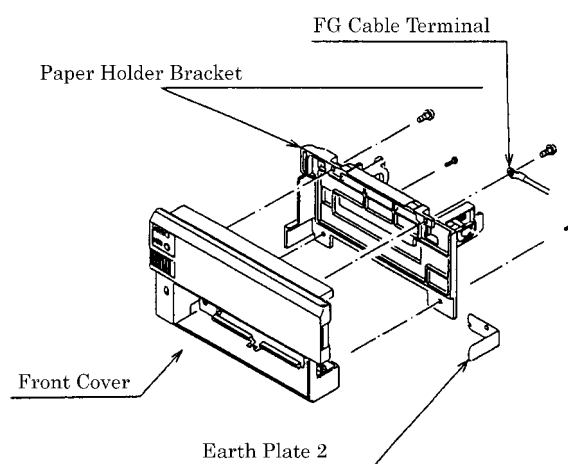
- Remove an N-PE assembly from the front cover.

- (1) Pull out a PE retainer.(It has been press-fit)
- (2) Remove the N-PE assembly.



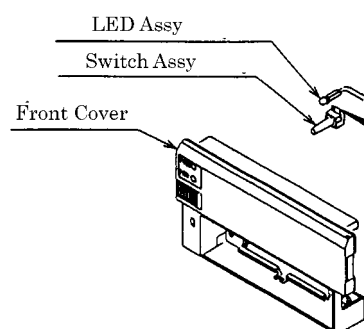
- Remove a paper holder bracket from the front cover.

- (1) Using the Phillips screwdriver, loosen 4 screws(M2 x 6) fixing the paper holder bracket.
- (2) Remove an earth plate 2 and FG cable terminal.
- (3) Remove the paper holder bracket.



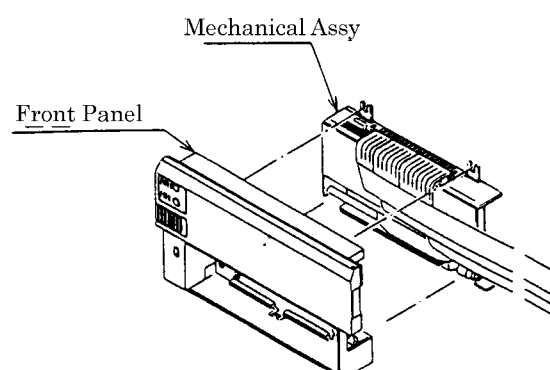
- Remove an operation panel assembly from the front cover.

- (1) Pull out a switch assembly.
- (2) Pull out a LED assembly.



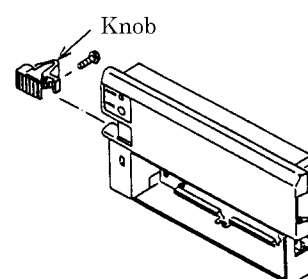
- Remove a mechanical assembly from the front cover.

- (1) Pull out the mechanical assembly from the front cover.



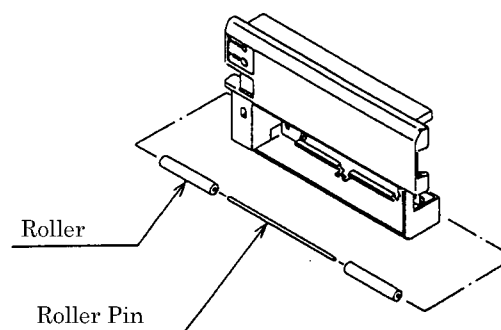
- Remove a knob from the front cover.

- (1) Using the Phillips screwdriver, loosen a screw(PHT, M2 x 6) fixing the knob.
- (2) Remove the knob.



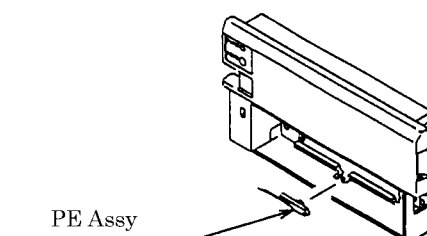
- Remove the rollers from the front cover.

- (1) Pull out a roller pin from the front cover.



- Remove a PE assembly from the front cover.

- (1) Remove the PE assembly from the front cover.



3-2 Reassembly Procedure

Reassemble each part in the reverse order of the disassembly procedure described in Section 3-1.

4. TROUBLESHOOTING

4-1 Troubleshooting Procedure

When a trouble occurs, confirm its phenomenon, locate a defective part in accordance with 4-2 Troubleshooting Guide, and troubleshoot as described below.

- **Phenomenon:** Find a trouble phenomenon in this column. If there are multiple phenomena, take all the corresponding items into consideration. This allows you to specify a hidden defective part.
- **Cause:** Lists as many possible causes as possible. Guess a trouble cause out of them and take its check method to specify the trouble cause.
- **Check Method:** Describes a check method to specify a trouble cause.
- **Remedy:** Troubleshoot by taking a remedy described in this column.

By troubleshooting in accordance with the above-mentioned procedure, you can troubleshoot efficiently with less misjudgments.

4-2 Troubleshooting Guide

Phenomenon	Cause	Check Method	Remedy
Printing failure	Faulty power supply	Check whether 5 V DC is available.	Supply 5 V DC.
No printing	Faulty mounting and connection of an interface cable	Check mounting and connection of the interface cable.	Connect the interface cable correctly.
	Faulty printer mechanism		Replace the printer mechanism unit.
Thin printing color	Faulty power supply	Check whether a 5 V DC power capacity is sufficient.	Use the power source with a sufficient capacity.
Missing dots	Foreign substance adhered to a printing head	Check the head for any adhered foreign substance.	Eliminate the foreign substance.
Bad printing quality	Faulty ribbon		Replace the ribbon.
Paper feed failure	Faulty connection of a motor connector	Check connection of the connector.	Connect the connector correctly.
A printing paper feed motor does not function or malfunctions.	Faulty power supply	Check whether a 5 V DC power capacity is sufficient.	Use the power source with a sufficient capacity.
	Faulty printer mechanism		Replace the printer mechanism.
The printing paper is not fed or fed irregularly.	Paper feed failure	Check whether or not the printing paper is jamming or torn and caught in a paper path.	Eliminate unnecessary printing paper and re-set it correctly.
	Foreign substance in the gear	Check the motor gear of the printer mechanism for any foreign substance.	Eliminate the foreign substance.
	Broken gear	Check the motor gear for breakage.	If broken, replace the printer mechanism.
Faulty sensor Does not detect the printing paper.	Faulty paper sensor	Check the window of the paper sensor for any foreign substance.	Eliminate the foreign substance or replace the printer mechanism.
When the trouble still persists		Replace the control board and check whether the printer functions properly.	Replace the control board.

* For the printer mechanism MD910 series, see the Service Manual separately provided.

5. SERVICE PARTS LIST

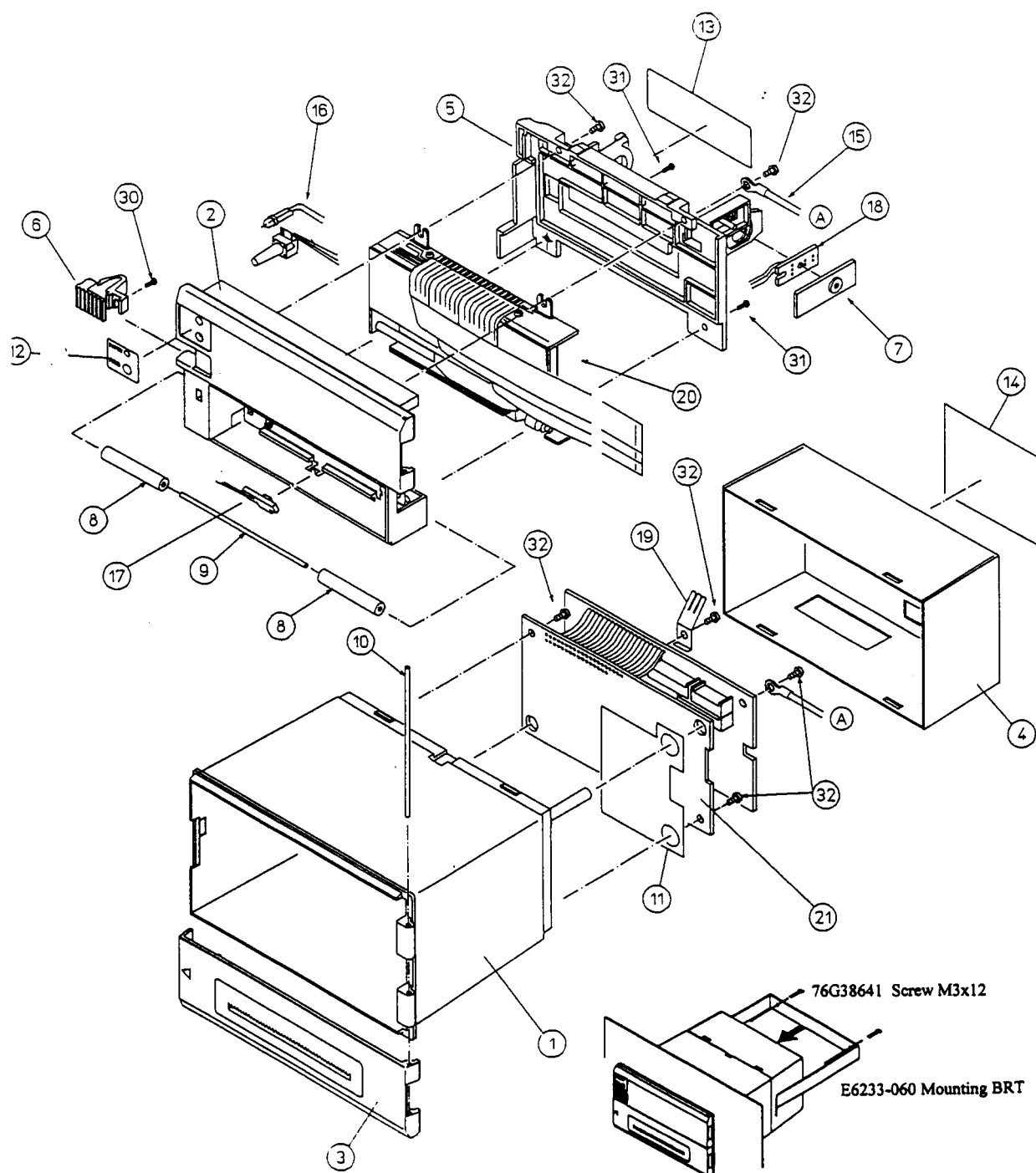
5-1 Parts List for Mechanism

EXPLODED VIEW

Ref. No.	Parts No.	Description	Q'ty	Remarks
1	E 62010760	Top Case	1	
2	E 6200-620	Front Panel-T	1	
3	E 6200-630	Front Panel-B	1	
4	E 62020240	Shield Cover	1	
5	E 6611-590	Paper Holder BK	1	
6	E 6233-020	Knob	1	
7	E 6611-600	PE Support	1	
8	E 6233-050	Panel Shaft Roller	2	
9,10	E 6233-030	Panel Shaft	2	
11	E 4035-780	Insulation Sheet	1	
12	E 5200-270	OP Sheet	1	
15	E 4035-770	FG Cable	1	
16	E 40000140	OP PCB Assy	1	
	E 4900-360	Harness 920-7	1	
	E 5102-450	Tact SW. SKHHNH	2	
	E 480-330	LED SEL2110S	2	
17	E 40000150	PE PCB Assy	1	
	E 4900-400	Harness 920-5	1	
	E 391-180	Photo Interrupter GP2S07	1	
18	E 40000160	N-PE PCB Assy	1	
	E 4900-370	Harness 920-6	1	
	E 391-110	Photo Interrupter GP2S24	1	
19	E 4035-790	FG Plate	1	
20	MD910	Printer MD910-SS		
	MD911	Printer MD911-SS		
	E 4900-330	FPC SMCD-4x210	1	
	E 4900-340	FPC SMCD-6x240	1	
	E 4900-350	FPC SMCD-7x225	1	
21	E 70010870	Main PCB Assy CBM920-RF		
	E 70010880	Main PCB Assy CBM920-PF		
	E 6233-060	Mounting BRT	1	
	76G38641	Screw M3x12 for mounting BRT	2	
30	76G60124	Screw M2x6	1	
31	76G23670	Screw M2x6	2	
32	76G22839	Screw M2.6x8	6	

5-2 Disassembly Drawing

EXPLODED VIEW CBM920-PF/-RF



5-3 Parts List for Control Board

1/2

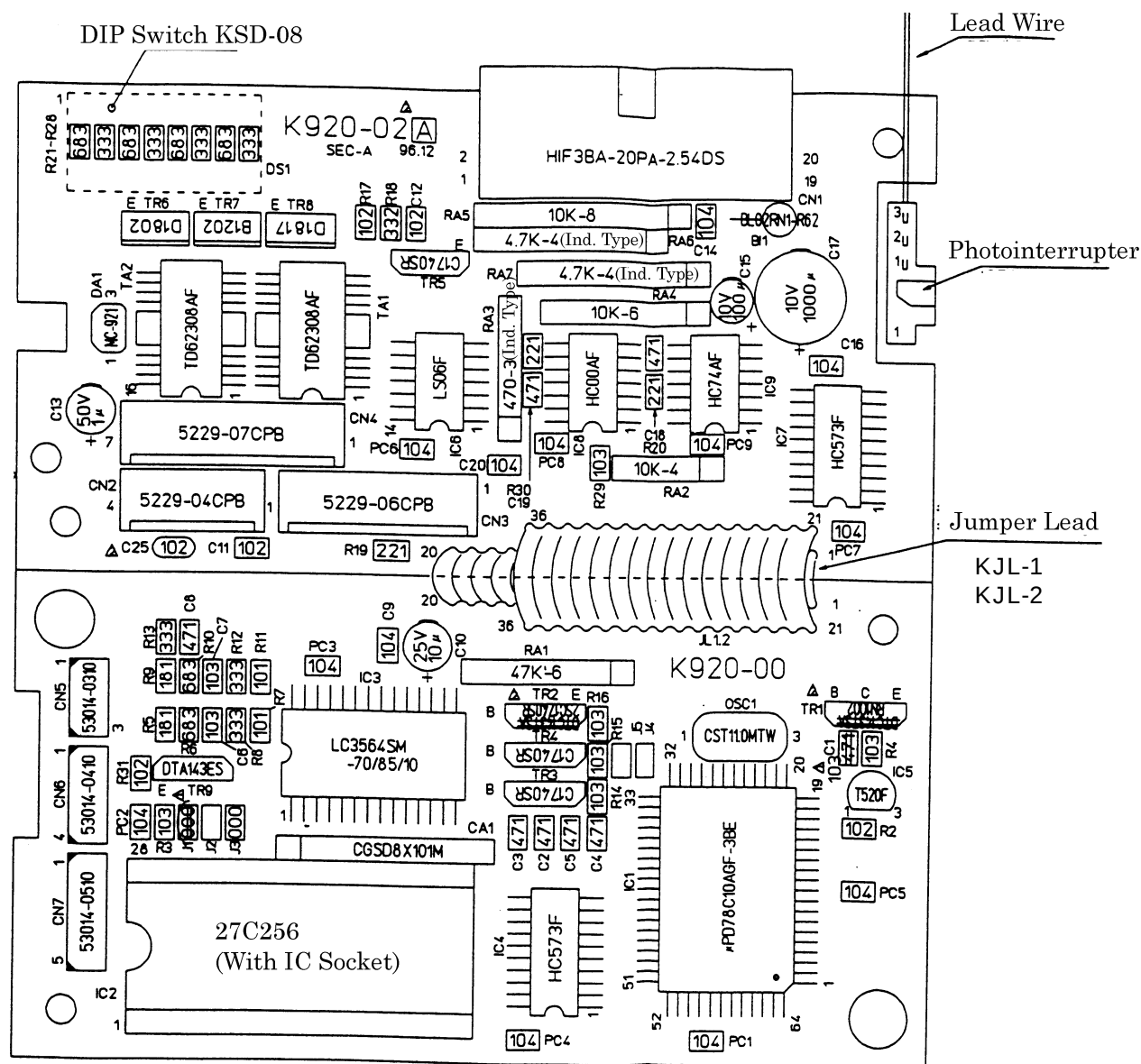
Ref. No.	Parts No.	Description	CBM-920-PF	CBM920-RF
IC 1	E 107-250	CPU uPD78C10AGF-3BE	1	1
IC 2	E 107-260	EP-ROM M27C256B-15F1	1	1
IC 3	E 107-320	S-RAM LC3564SM-70/75/10	1	1
IC 4,7	E 210-090	C-MOS TC74HC573AF	2	
IC 4	E 210-090	C-MOS TC74HC573AF		1
IC 5	E 202-910	Reset IC PST520F	1	1
IC 6	E 210-110	TTL NS74LS06F	1	1
IC 7	E 2010040	I/F IC MAX232CPE		1
IC 8	E 210-080	C-MOS TC74HC00AF	1	
IC 9	E 210-100	C-MOS TC74HC74AF	1	
TR 1	E 393-010	Transistor RN1002	1	1
TR 2-5	E 348-040	Transistor 2SC1740SR	4	4
TR 6	E 379-060	Transistor 2SD1802ST	1	1
TR 7	E 327-070	Transistor 2SB1202ST	1	1
TR 8	E 379-070	Transistor 2SD1817	1	1
TR 9	E 358-060	Transistor DTA143ES	1	1
TA 1,2	E 390-280	Tr. Array TD62308AF	1	1
DA 1	E 400-590	Diode Array MC-921	1	1
OSC 1	E 501-380	X'tal CST11.0MTW	1	1
DS 1	E 5103-510	Dip Switch KSD-08	1	1
DS 2	E 5103-530	Dip Switch KSD-05		1
BL 1	E 4009-510	Fe. Beads BL02RN1-R62	1	1
R 2,17,31	E 3900-500	Chip Re. CR10-102J	3	3
R 3,4,14-16,29	E 3900-510	Chip Re. CR10-103J	6	
R 3,4,14-16	E 3900-510	Chip Re. CR10-103J		5
R 5,9	E 3900-520	Chip Re. CR10-181J	2	2
R 6,10,21,23 25,27	E 3900-560	Chip Re. CR10-683J	6	6
R 7,11	E 3900-490	Chip Re. CR10-101J	2	2
R 8,12,13,22 24,26,28	E 3900-550	Chip Re. CR10-333J	7	7
R 18	E 3900-540	Chip Re. CR10-332J	1	1
R 19,20,30	E 3900-530	Chip Re. CR10-221J	3	
R 19,20,30	E 3900-530	Chip Re. CR10-221J		2

2/2

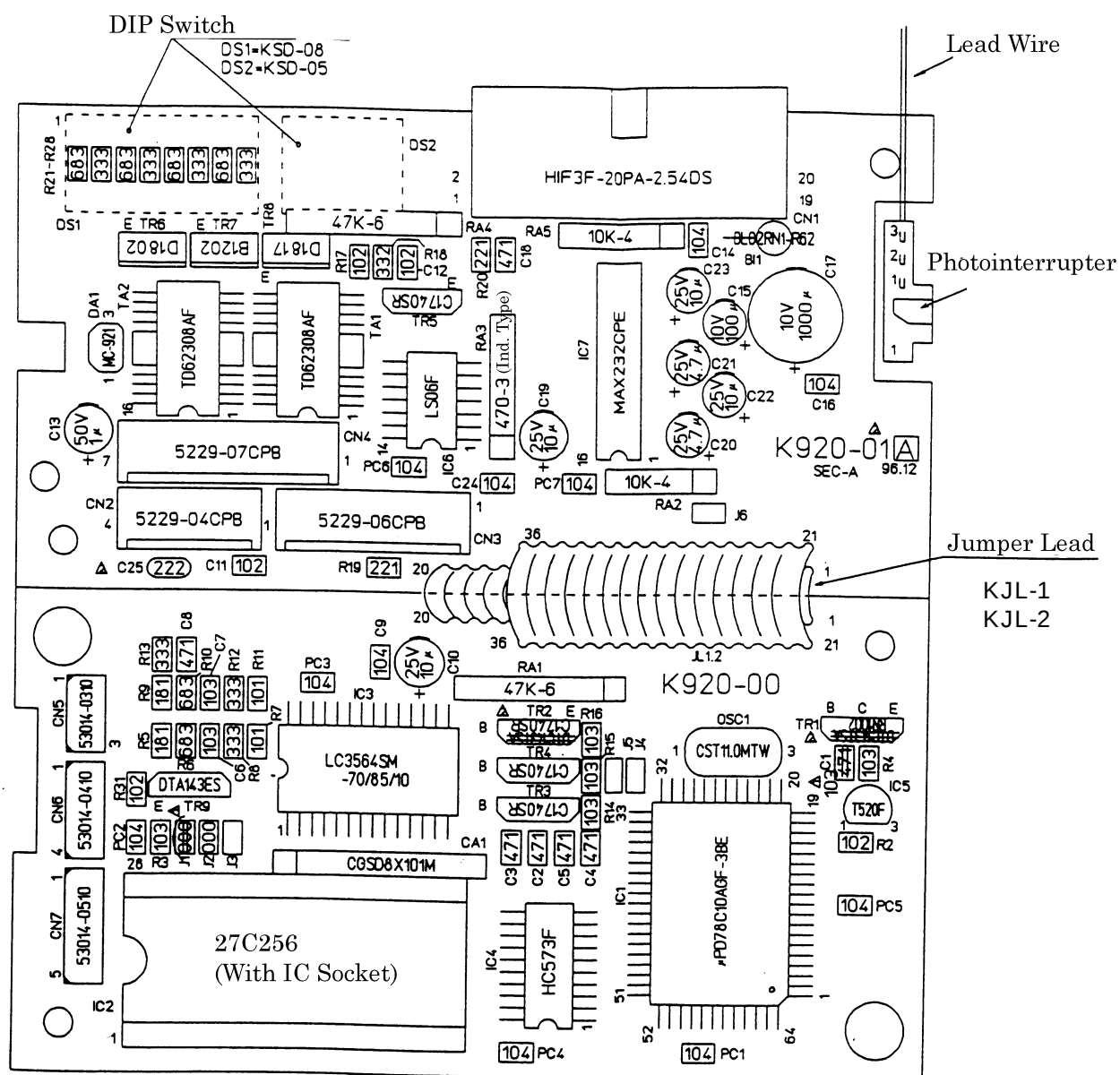
Ref. No.	Parts No.	Description	CBM920-PF	CBM920-RF
CA 1	E 2000-090	Ca. Array CGSD8x101M	1	1
C 1,6,7	E 2600-050	Chip C. Cap. GRM40F103Z50	3	3
C 2-5,8,18,19	E 2600-090	Chip C. Cap. GRM40B471K50	7	
C 2-5,8-18	E 2600-090	Chip C. Cap. GRM40B471K50		6
C 9,14,16,24	E 2600-120	Chip C. Cap. GRM40F104Z25	4	4
C 10	E 2010-860	El. Cap. 25JS-10uF	1	
C 10,19,22,23	E 2010-860	El. Cap. 25JS-10uF		4
C 13	E 2010-890	El. Cap. 50JS-1uF	1	1
C 15	E 2010-870	El. Cap. 10MR-100	1	1
C 17	E 2010-880	El. Cap. 10MR-1000 10x15	1	1
C 20,21	E 2010-900	El. Cap. 25JS-4.7uF		2
C 25	E 2122-060	C. Cap. DD104-63B222K50	1	1
PC 1-9	E 2600-120	Chip C. cap. GRM40F104Z25	9	
PC 1-7	E 2600-120	Chip C. cap. GRM40F104Z25		7
RA 1	E 3500-220	Re. Array M7-1-473J	1	
RA 1,4	E 3500-220	Re. Array M7-1-473J		2
RA 2	E 3500-050	Re. Array M5-1-103J	1	
RA 2,5	E 3500-050	Re. Array M5-1-103J		2
RA 3	E 3500-210	Re. Array M6-3-471J	1	1
RA 4	E 3500-090	Re. Array M7-1-103J	1	
RA 5	E 3500-040	Re. Array M9-1-103J	1	
RA 6,7	E 3500-110	Re. Array M8-3-472J	2	
CN 1	E 48000735	Connector HIF3F20PA-2.54DS	1	1
CN 2	E 48000740	Connector 5229-04CPB	1	1
CN 3	E 48000745	Connector 5229-06CPB	1	1
CN 4	E 48000750	Connector 5229-07CPB	1	1
CN 5	E 48000755	Connector 53014-0310	1	1
CN 6	E 48000760	Connector 53014-0410	1	1
CN 7	E 48000765	Connector 53014-0510	1	1
JL 1	E 51060010	Wire Array KJL-1	2	2
JL 2	E 51060020	Wire Array KJL-1	2	2
J 1,3	E 3900-480	Chip Re. CR10-000J	2	
J 1,2	E 3900-480	Chip Re. CR10-000J		2

5-4 Parts Layout Drawing

5-4-1 Main PCB Assy for CBM-920-PF (Parallel Interface)

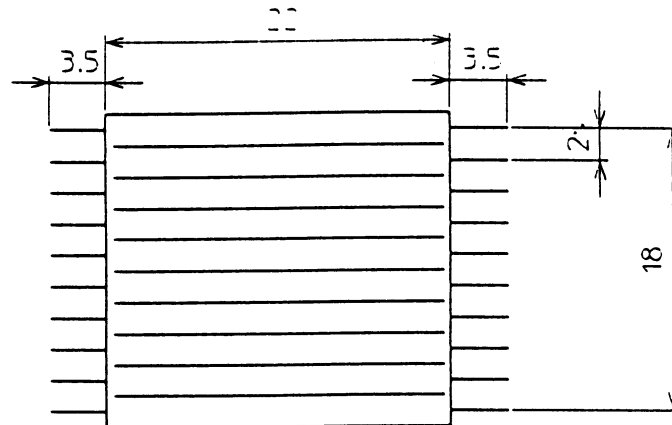


5-4-2 Main PCB Assy for CBM-920-RF(Serial Interface)



5-4-3 Drawing for Jumper Lead

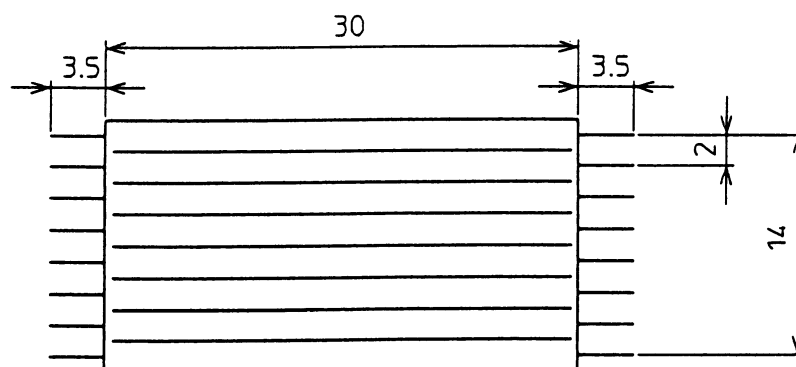
KJL-1 (25-0326)



SUMITOMO ELECTRIC INDUSTRIES

SMVJ-B-7/0.16(OM-1)×10×22-P2.0-S3.5

KJL-2 (25-0327)



SUMITOMO ELECTRIC INDUSTRIES

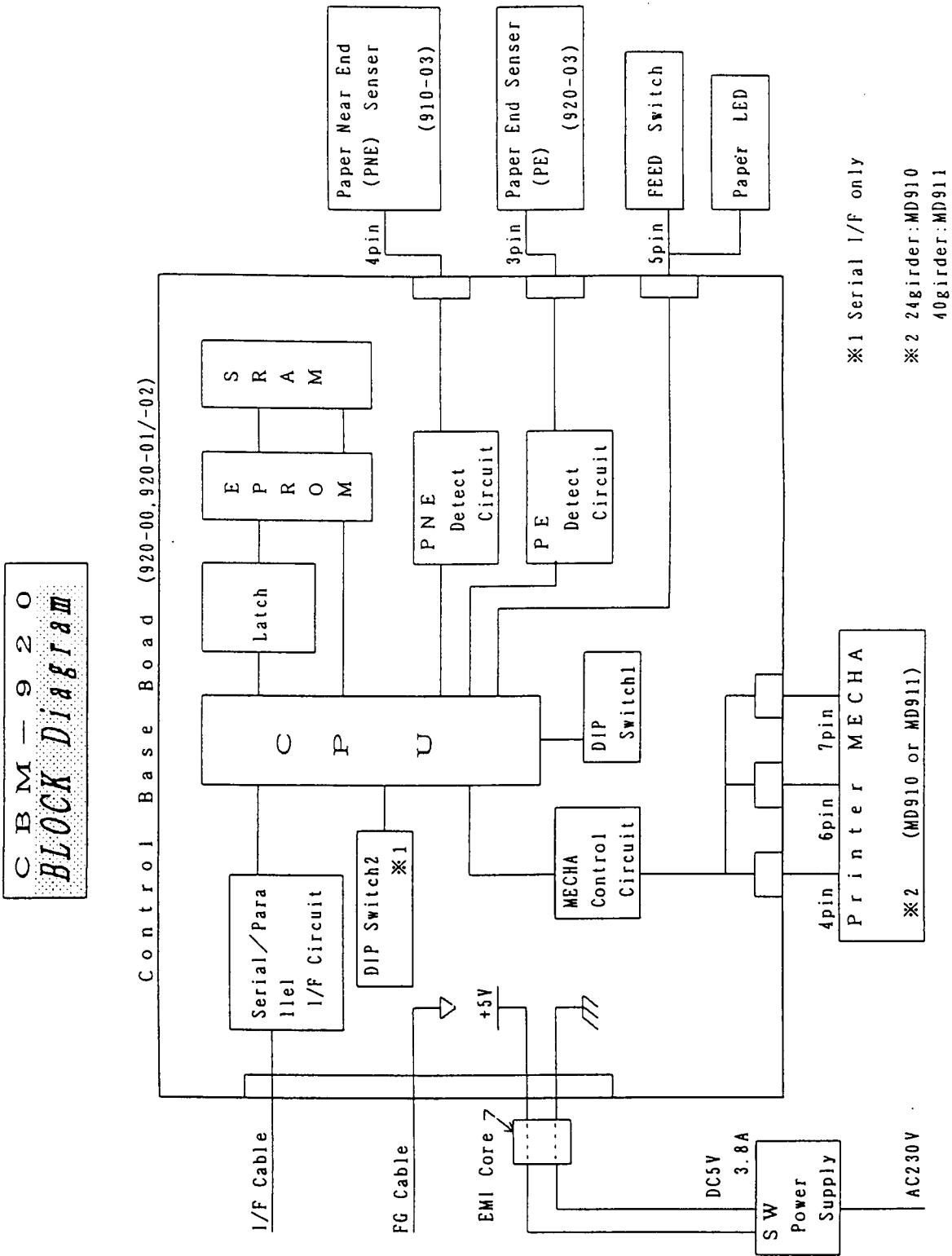
SMVJ-B-7/0.16(OM-1)×8×30-P2.0-S3.5

6. DRAWING

The following lists the reference drawings for maintenance, and so on.

- Block Diagram
- Circuit Diagram ----- For the serial interface, For the parallel interface

6-1 Circuit
6-1-1 Block Diagram



6-1-2 Coverall Wiring Diagram

