SHARP

SERVICE MANUAL

CE-159

SHARP CORPORATION

SERVICE MANUAL
MODEL CE-159
RS-232C Interface
(PC-1500 Option)

CONTENTS

Insert this manual into the service manual "PC-1500 & Option"

1. FEATURES

The CE-159 is a program module with an 8 K byte memory capacity RAM (capable of being entered or read) for use on the PC-1500. It can be used to assign a part of the RAM capacity as an area for exclusive use in readouts, allowing no entry of new data or program change into the area. Even when disconnected from the PC-1500, the CE-159 retains the program contents in this area due to its built-in lithium cell. This is available for immediate use when reconnected to the computer.
Therefore, if programs are stored in several CE-159 modules, they can be executed only by replacing the modules.

2.SPECIFICATIONS

Model:	CE-159
Type:	RAM module
Capacity:	8 K bytes
Backup power source:	1 DC 3V Lithium cell CR2032
Battery life:	About 5 year (If installed in the PC-1500) About 2 years (If removed from the PC-1500) (When used at 25°C; Life varies with operation and environment.)
Operating temperature:	0°C to 40°C
Outside dimensions:	40.9 mm (W) x 48.2 mm (D) x 8.5 mm (H) 1-5/8" (W) x 1-29/32" (D) x 11/32" (H)
Weight:	12 g (0.03 lbs.) (including cell)
Accessories:	Housing case, 3 cover labels, Lithium cell (built into the CE-159) and Instruction Manual

3. PRECAUTIONS

- The PC-1500 can accommodate only one module at a time.
  Therefore, with the CE-159 installed, another module cannot be used on the PC-1500.
- When the CE-159 is disconnected from the PC-1500, the programs and data stored outside the exclusive readout areas cannot be retained.
  If they are needed, record them on tape before disconnecting the CE-159 from the PC-1500.
- With the CE-159 connected to the PC-1500, the programs, data or reserved contents prestored in the PC-1500 cannot be used.
  Therefore, if needed, record them on tape before connecting the CE-159 to the PC-1500.
- When the CE-159 is connected to the PC-1500, be sure to operate the following:

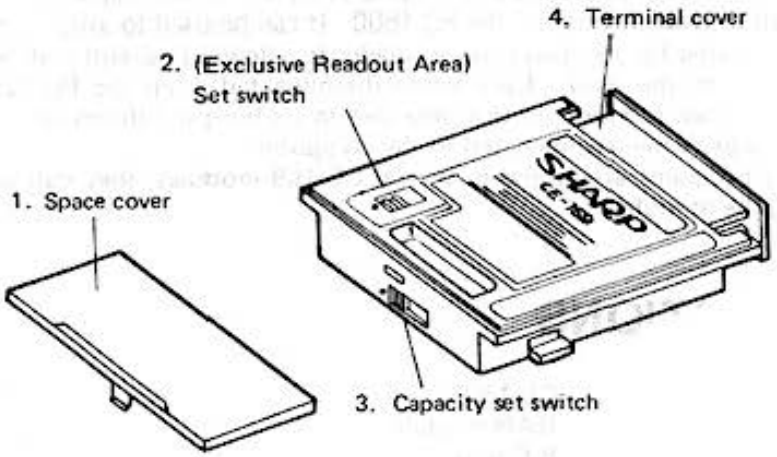
  (OFF) ON CL

  PRO mode designation

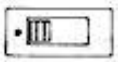
  N E W 0 ENTER

  The N E W 0 ENTER operation will initialize the state of the computer (The initial setting will be executed).
- Never touch the Capacity Set Switch when the Set Switch is turned to the "Setting" (• ▯) position. Failure to observe this may result in the following:
  - ↑ , ↓ key operation or LIST command causes an incorrect display.
  - Executing LIST causes the paper feed.
  - Part of the program is cleared.

4. NOMENCLATURE AND FUNCTIONS



2. (Exclusive Readout Area) Set Switch



With the switch positioned at the mark •, the memory capacity designated by the Capacity Set Switch can be set as an exclusive readout area.
With the switch positioned opposite the mark •, the exclusive readout area is reset, making the CE-159 memory operable as RAM.

3. Capacity Set Switch

Numbers representing the capacity are indicated on the module rear.

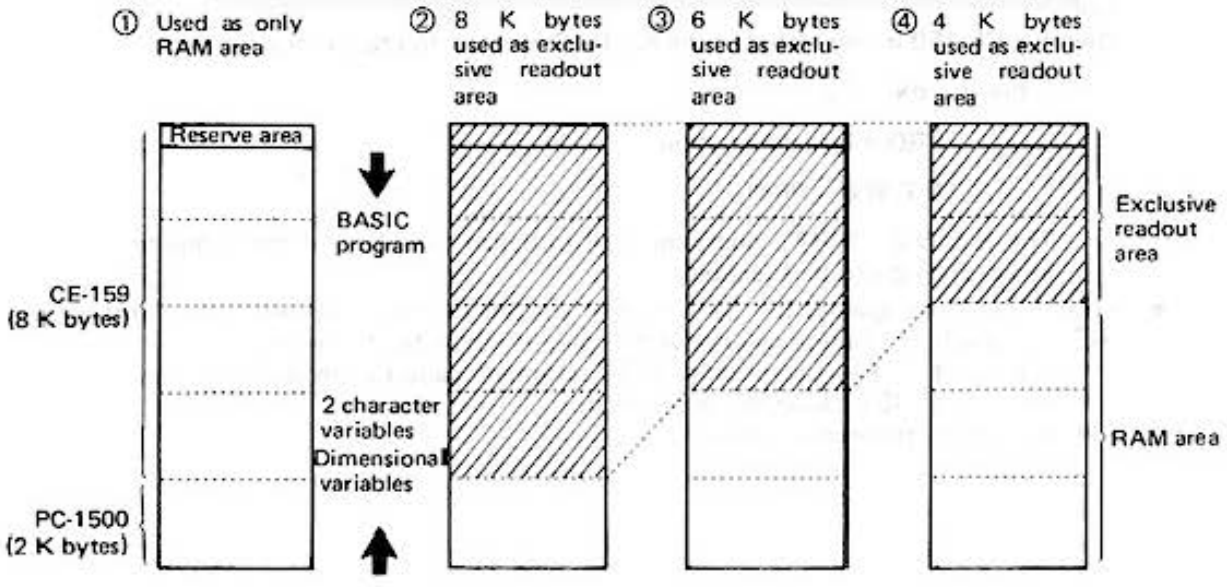
This switch designates the capacity for use as an exclusive readout area. Setting the switch at positions 8, 6 and 4 designates 8 K bytes, 6 K bytes and 4 K bytes, respectively. With the Set Switch positioned at the •[ ], the designated capacity becomes an exclusive readout area. This switch may be in any position when the CE-159 is not used to designate an exclusive readout area.

4. Terminal Cover

This cover protects the CE-159 terminal when the CE-159 is not connected to the PC-1500. When connected, this terminal cover is housed inside the CE-159.

RAM Area and Exclusive Readout Area

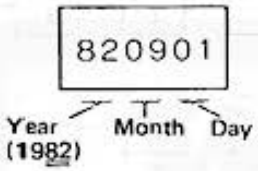
The RAM area and exclusive readout area are illustrated as follows:



When the CE-159 is used as a RAM area, the reserve area can be secured inside the module, as illustrated. (The reserve area inside the PC-1500 can be cleared.) The BASIC program is written from the CE-159, while variables are secured from the PC-1500. With the CE-159 connected to the PC-1500, the total memory capacity becomes 10 K bytes including the reserve area.
When used as a RAM area, this memory capacity makes it possible to write a program, secure variables, change and write the reserve contents.
When an exclusive readout area is set, writing or program change in this area becomes impossible. Therefore, only the remaining RAM area can be used as variables. (The reserve area can also be made for exclusive use in readouts, making writing or program change impossible.)

5. CELL LIFE AND REPLACEMENT

Cell life
The life of a lithium cell in the CE-159 is about 5 years at normal temperature (25°C) when the CE-159 is connected to the computer, and about 2 years when disconnected from the computer. The contents of the CE-159 can be therefore retained for these periods of time, respectively.
The CE-159 is provided with the following data label:



This data indicates the day when the lithium cell is placed in the CE-159. The cell life in the CE-159 is about 5 years or 2 years according to this date under normal temperature (25°C). However, it may be shortened depending on an operating environment where the temperature is too high or too low, causing the program in the exclusive readout area to disappear. To prevent this, it is recommended that you record the program or data on tape for storage.

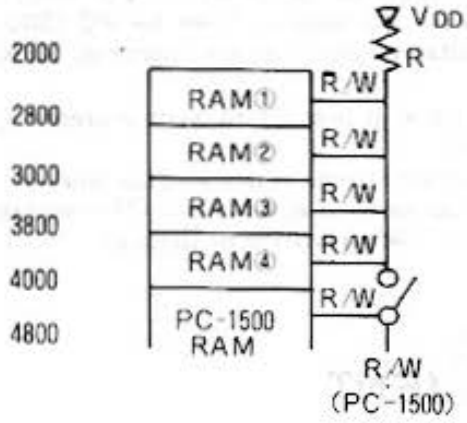
When battery power declines, the following will occur:

(1) Program execution is not possible.
(2) Incorrect displays are indicated.
(3) Errors take place.

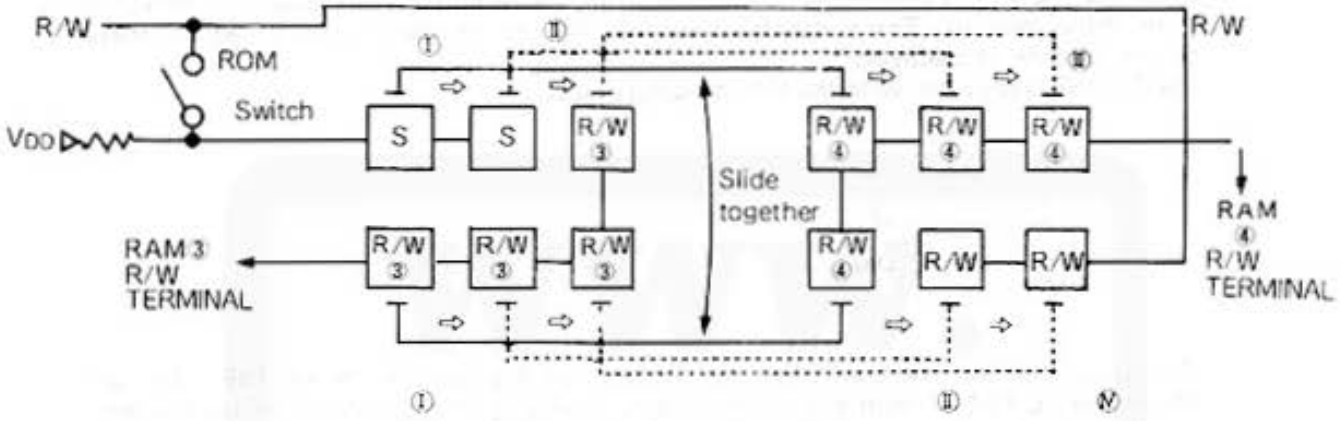
For trouble-free operation, replace the cell at your nearest Sharp service stations.

Caution should be taken if there is a lapse of more than 5 years from the date on the cell label or the cell is already experded. If installed in the CE-159, it could cause battery leakage, resulting in damage to the unit.

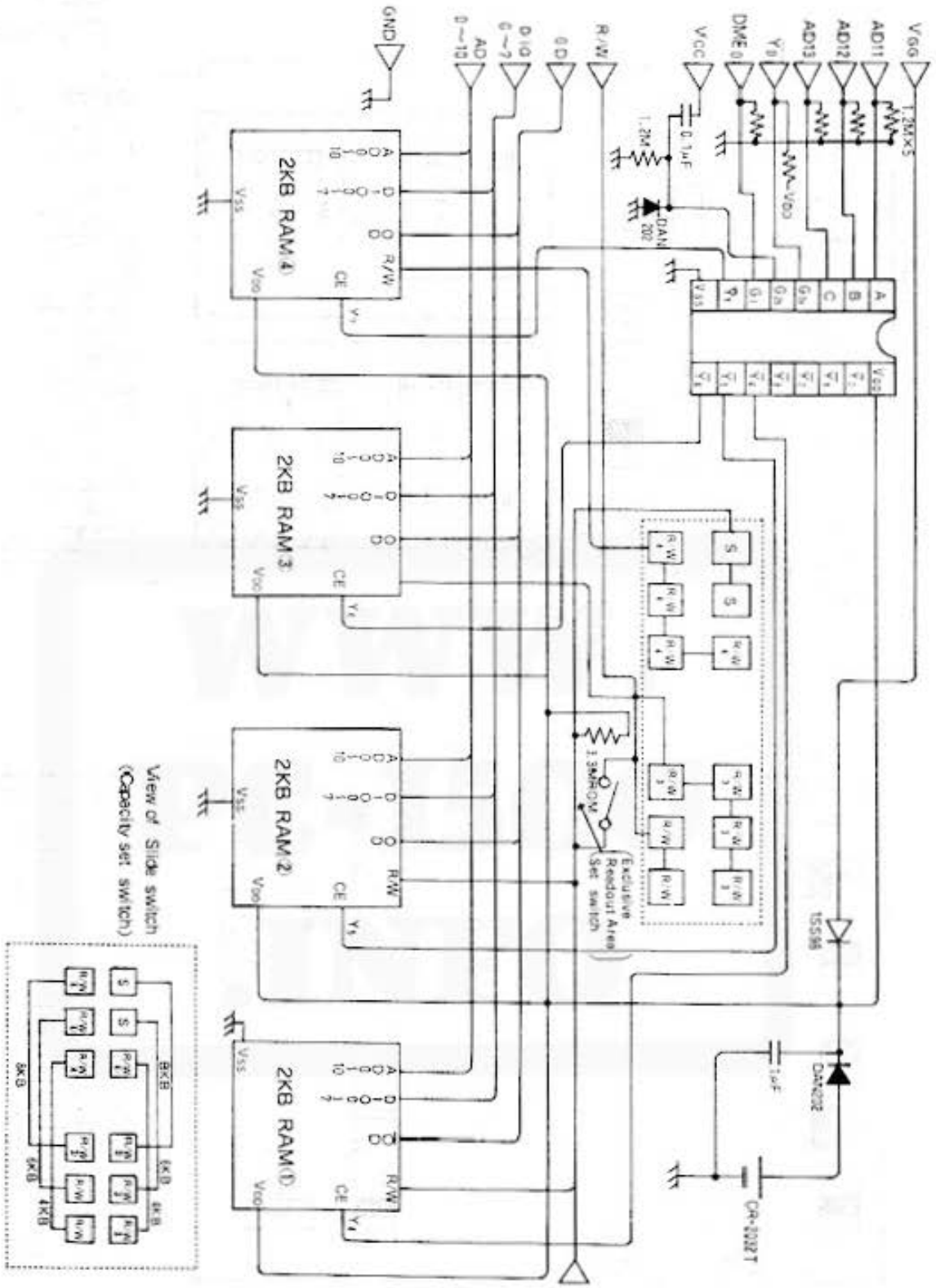
6. MEMORY ADDRESS



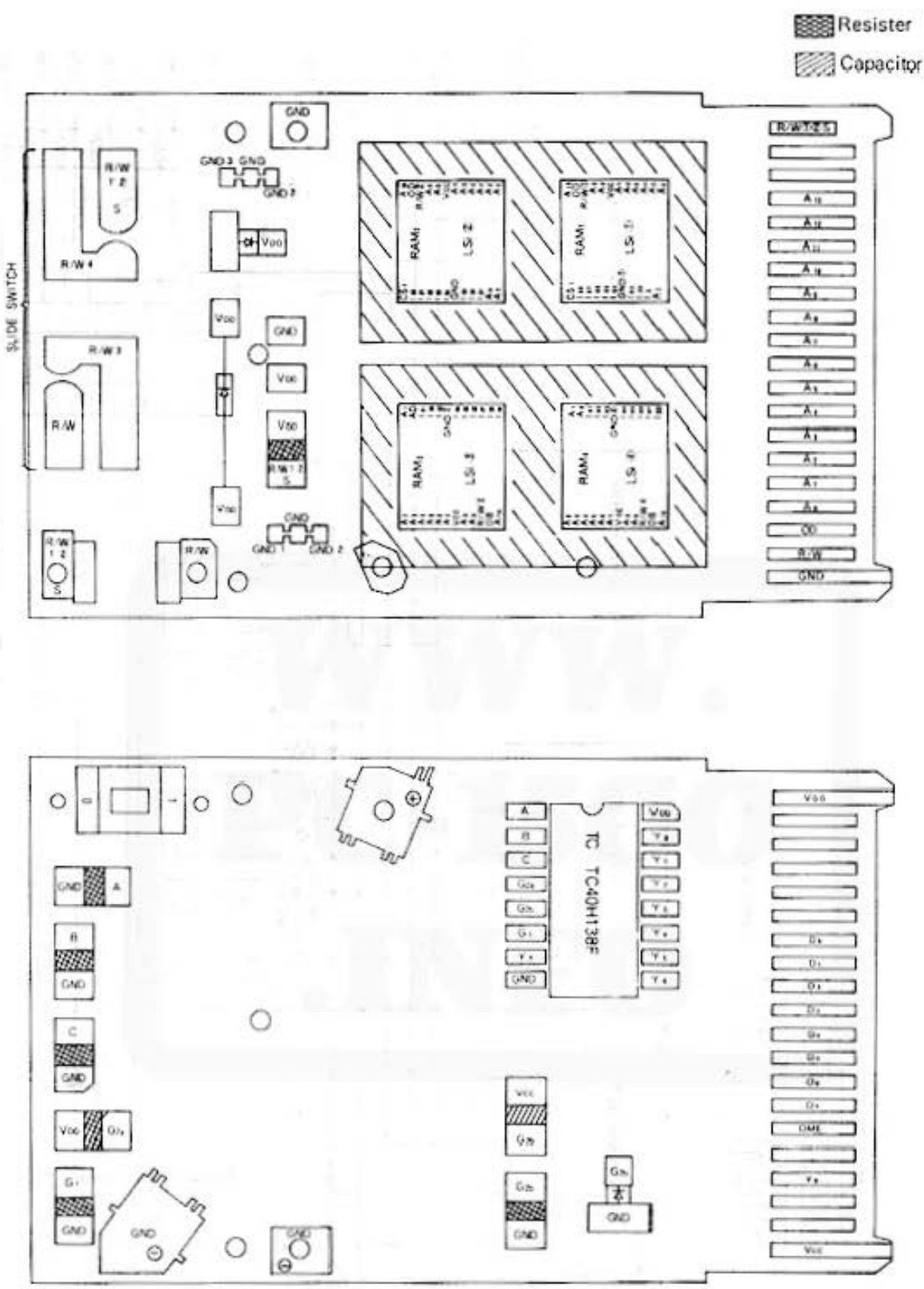
7. MEMORY SET UP SWITCH



8. CE-159 CIRCUIT DIAGRAM



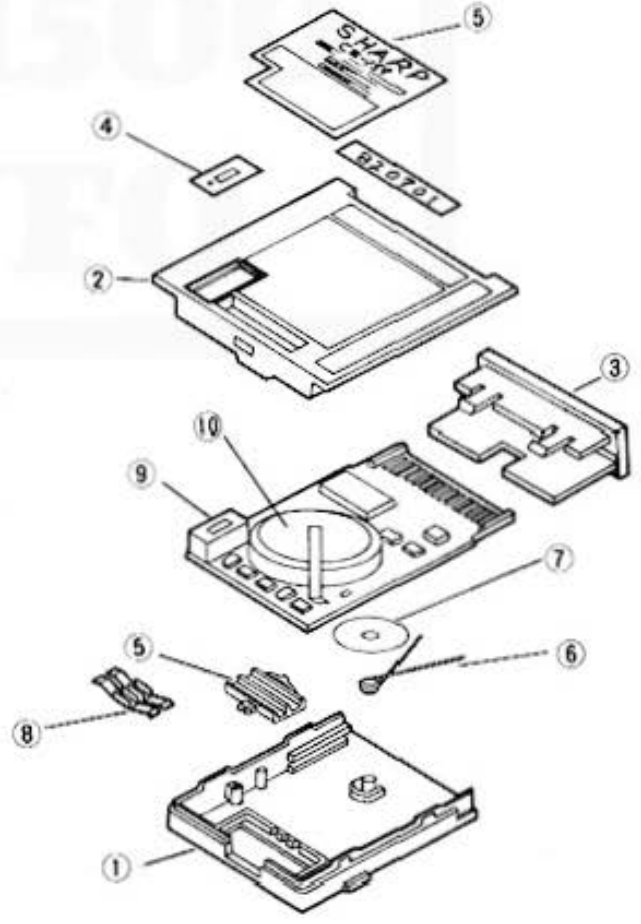
9. CE-159 PARTS POSITION CHART



10. PARTS LIST & GUIDE

No.	PARTS CODE	DESCRIPTION	NEW MARK	PARTS RANK	PRICE RANK
1	GCABA2670CCZZ	Cabinet bottom	AB	N	D
2	GCABB2671CCZZ	Cabinet top	AC	N	D
3	GCABC2672CCZZ	Cabinet slider	AC	N	D
4	HDECA2088CCZZ	Switch DEC.	AA	N	D
5	JKNBZ1796CCZZ	Slide Switch knob	AC	N	D
6	MSPRC1202CCZZ	Spring	AA	N	D
7	PZETL1462CCZZ	Sheet	AA	N	D
8	QCNTM1042CCZZ	Contact	AA		D
9	QSW-S1347CCZZ	Dip switch	AH	N	B
10	CBATZ6441CCZZ	Battery	AM	N	B
	TLABZ1689CCZZ	Label	AE	N	D
	TLABZ1690CCZZ	Switch cover label	AD	N	D
	GCASP1091CCZZ	Case bottom	AE	N	D
	GCASP1092CCZZ	Case top	AC	N	D
	PPACG1004CCZZ	Cushion	AC	N	C
	PSHEP1085CCZZ	Sheet	AC	N	C
	TCAUK1192CCZZ	Caution label	AF	N	D
	SPAKA7307CCZZ	Packing cushion	AY	N	D
	SPAKC7310CCZZ	Packing case	AC	N	D
	TINSM3687CCZZ	Inst book	BX	N	D
	GFTAU1281CCZZ	Lid	AB		D
	DUNTK6838CCZZ	PWB unit	BY	N	E
	RC-CZ1021CCZZ	Capacitor 0.1μF	AF		C
	RC-SE1007CCZZ	Capacitor 1μF	AC		C
	RH-DZ1008CCN1	Zener diode	AD		C
	VHD1SS98///-1	Diode 1SS98	AQ		B
	VHiTC40H138FN	iC TC40H138FN	AA		B
	VR5-TP2BD125J	Resister 1.2MΩ (Chip)	AA		C
	VR5-TP2BD335K	Resister 3.3MΩ (chip)	AE		C

- The lead of lithium battery is not soldered. (For prevent damage caused by short circuit with aluminum foil which is used for protection from damage of static electricity.)
- When the unit stocked long time period, the battery will be discharged it self life of battery will shorter than the specification.



SHARP CORPORATION
Industrial Instruments Group
Reliability & Quality Control Department
Yamatokoriyama, Nara 639-11, Japan
December 1982 Printed in Japan