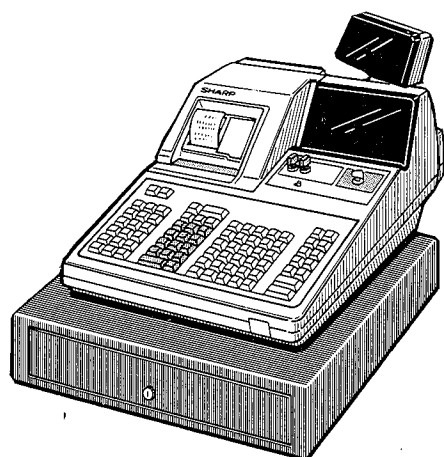


SHARP SERVICE MANUAL

CODE:00ZER3250ASME



RAK113

**ELECTRONIC
CASH REGISTER**

A77 A2

MODEL ER-3250

CANADIAN Version

SRV Key : LKGIM7113RCZZ

PRINTER : M-2640

CAUTION

EXTREME CAUTION MUST BE TAKEN WHEN SERVICING THIS MACHINE. EVEN THOUGH THE MODE SWITCH IS IN THE OFF POSITION, VOLTAGE IS STILL SUPPLIED TO THE ENTIRE MACHINE.

WHEN WORKING ON THIS MACHINE MAKE SURE THAT THE POWER CORD IS REMOVED FROM THE WALL OUTLET.

CONTENTS

	Page
1. BLOCK DIAGRAM	1
2. SPECIAL SERVICE TOOLS	2
3. REFERENCE DOCUMENTS	3
4. SPECIFICATIONS	3
5. OPTIONS	11
6. SERVICE (SRV) MODE	13
7. PROGRAM (PGM2/PGM1) MODE	25
8. OP X/Z, X1, Z1/X2/Z2 MODE	36
9. SERVICE PRECAUTIONS	37
10. DOWN LOAD FUNCTION	38
11. TEST FUNCTION	41
12. CIRCUIT DESCRIPTION	55
13. INSTALLATION OF SERVICE OPTIONS	77
14. CIRCUIT DIAGRAM AND PWB LAYOUT	85
PARTS GUIDE	

1. BLOCK DIAGRAM

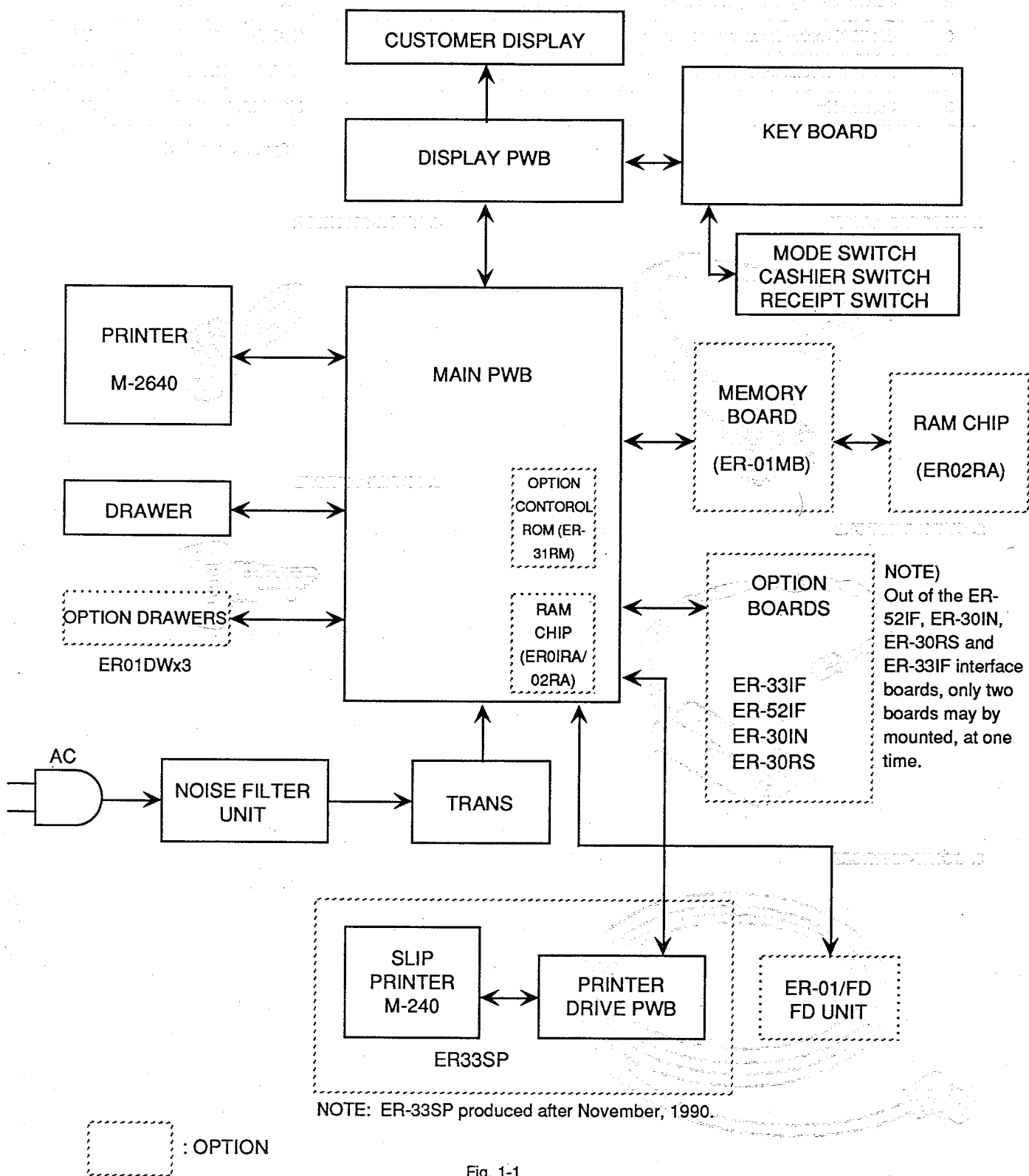


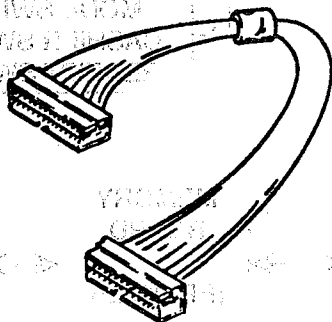
Fig. 1-1

2. SPECIAL SERVICE TOOLS

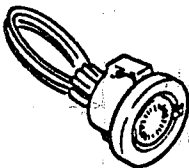
No.	Description	Parts code	Price rank
1.	Expansion cable with 30pin connectors for optional Board*	UKOGG0061CSZZ	BF
2.	Service battery with 2pin connector for main PWB and optional memory board*	CKOG-6626RCZZ	AX
3.	ER-52CB cable for memory transfer	QCNW-6952RCZZ	AY
4.	Loop back connector for serial i/F	UKOG-6651RCZZ	AY
5.	Service Key	LKGIM7113RCZZ	AK

*2pcs are required.

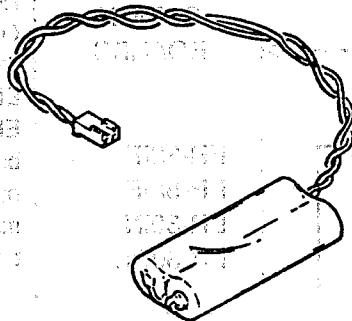
1. UKOGG0061CSZZ



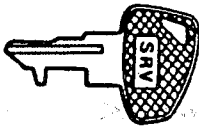
4. UKOG-6651RCZZ



2. CKOG-6626RCZZ



5. LKGIM7113RCZZ



3. QCNW-6952RCZZ

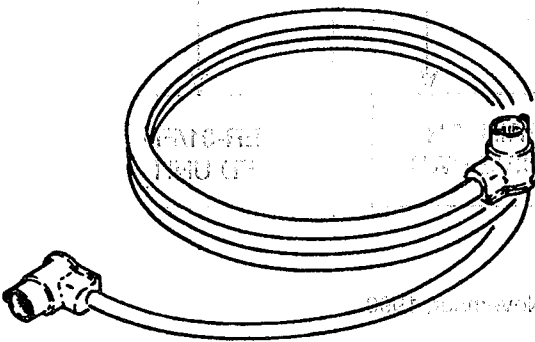


Fig. 2-1

3. REFERENCE DOCUMENTS

- (1) Cash register. basic manual
- (2) Printer M-2640 service manual (00ZM2640/SM-E) SECR-286
- (3) Option service manual for ER-3250.
- (4) Options installation manual for ER-3250.
- (5) SLIP printer M240 service manual.

4. SPECIFICATIONS

4-1. Appearance/Rating

1) Appearance

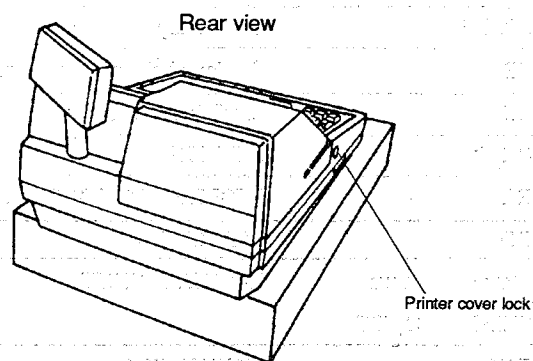
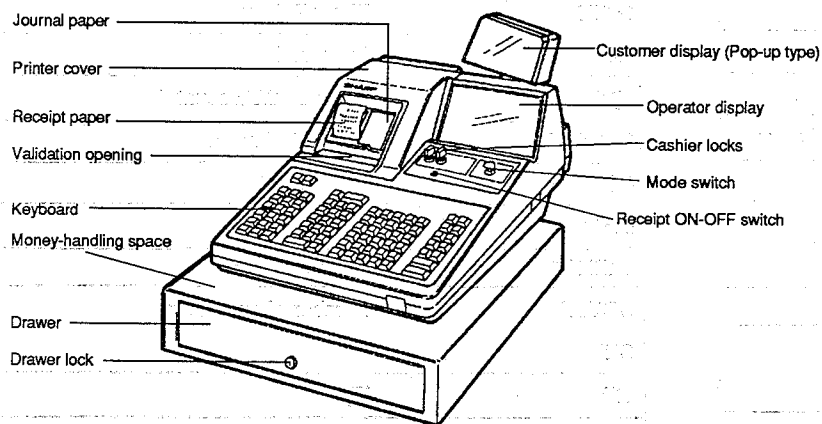


Fig. 4-1

4-3. Key board

ER-3250 Standard key layout

↑ RECEIPT	↑ JOURNAL														
				BR	PLU/SUB									FS SHIFT	FS TEND
PRINT	#	SCALE		TAX	TAX ₁ SHIFT	TAX ₂ SHIFT		6	12	18	24	30		CH ₄	CH ₅
PCPT	⊖1	⊖2		@/FOR	•	CL		5	11	17	23	29		CH ₂	CH ₃
CONV	%1	%2		7	8	9		4	10	16	22	28		CHK	CH ₁
RA	PO	PB		4	5	6		3	9	15	21	27		AUTO	MDSE SBTL
RFND SALE	NS	CB		1	2	3		2	8	14	20	26		SBTL	
RFND	VOID	SRVC		0		00		1	7	13	19	25		CA/AT	

Fig. 4-2

(2) Key top name

Standard key top

Keytop symbol	Key function
00,0~9	Numeric
1~30	Department
@/FOR	Multiplication/split pricing
.	Decimal point
CL	Clear
↑ RECEIPT JOURNAL	Receipt/journal
PRINT	Validation print
RCPT	Print duplicate
PLU/SUB	PLU/sub dept code entry
SCALE	Scale entry
PB	Previous balance or additional order
CB	Credit balance or new check
SRVC	SERVICE
RA	RECEIVED ON ACCOUNT
PO	PAID OUT
TAX1 TAX2 SHIFT SHIFT	TAX1/TAX2 SHIFT
TAX	MANUAL TAX
#	Non add code entry
⊖1, ⊖2	Discount-1/discount-2
%1,%2	%1,%2
RFND	Refund
BR	Bottle return
SBTL	Tax-included subtotal
AUTO	Automatic squencing key-input
VOID	Void
NS	NO SALE
CONV	Foreign country conversion
FS SHIFT	FOOD STAMP SHIFT
FS TEND	FS subtotal/FS tendered
CA/AT	Cash/cash tendered
MDSE SBTL	Merchandise subtotal
CHK	Check
CH1~CH5	Charge-1 to charge-5
RFND SALE	Refund type of sales

Option key top

Keytop symbol	Key function
TRAY SBTL	Tray subtotal
%3,%4	%3,%4
DEPO	DEPOSIT
AUTO 2~5	Automatic squencing key
DEPO RFND	DEPOSIT REFUND
CONV2~4	Conversion rate 2~4
000	000Key
31~50	Department key
1~156	Direct PLU key
TAX 3 SHIFT	Tax 3 shift
⊖3, ⊖4	Discount-3/Discount-4
CH6,CH7	Charge6/charge7
CA2	Cash total2
L1~L3	PLU level shift
TABLE #	Table number
COVER	Number of customers
CNT	
TIP	Tip
TAX 4 SHIFT	Tax 4 shift

4-4. Mode switch

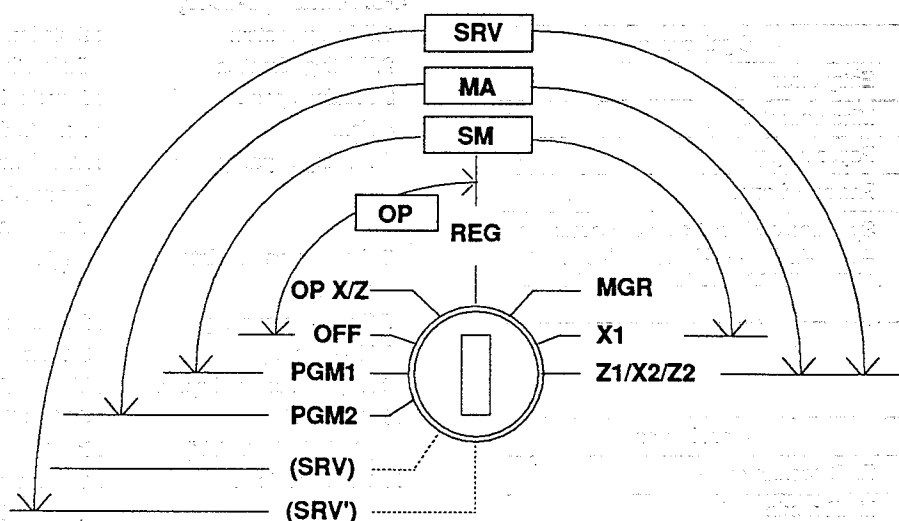


Fig. 4-3

- *The key can be removed in the REG or OFF position.
- *Position OP X/Z can be prohibited by programming.
- *Service mode is not written on mode switch panel.

[Functions]

- Function for each key position
- SRV: Service mode (To reset the timer, key, and display controllers, and the system)
- SRV: Service mode (Service programming)
- PGM2: Allows programming of an item that is not changed frequently, in addition to the PGM1 mode programming.
- PGM1: Allows programming of items frequently changed (e.g. department, PLU pricing, and discount rate setting).
- OFF: Disables key entry after turning the display off. The power supply is still active.
- OP/XZ: Allows X or Z operation by servers or cashiers.
- REG: Allows registrations.
- MGR: Allows the operations, by authorized persons such as a manager (e.g. correction after transaction finished or cancellation of entry limits), which are not permitted to ordinary cashiers.
- X1: Allows reading of a day's sales total.
- Z1/X2/Z2: Allows resetting of a day's sales total, and reading or resetting sales totals in a specified period.

4-5. Display

(1) Operator Display

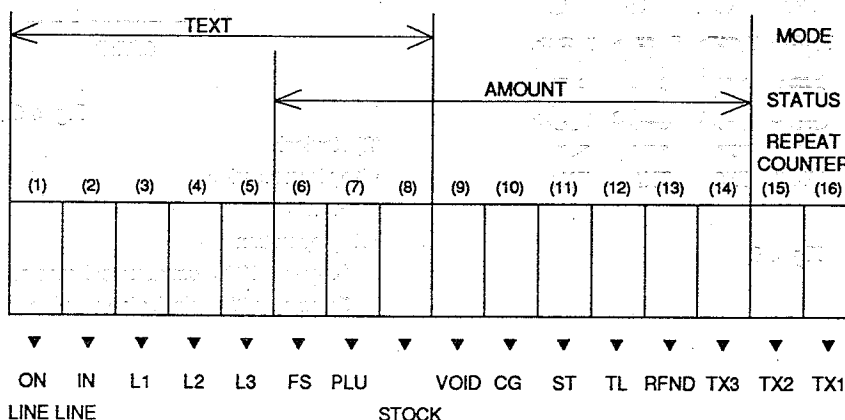


Fig. 4-4

Error kind display

Prompt	Significance
ENTRY ERROR	Entry error
MISS OPERAT	Miss operation
PAPER EMPTY	Paper empty
S.CODE ERROR	Password error
NOTAVAILABLE	Specified code not correctly available
ENTER CHECK #	Enter Guest check # compulsory

Status kind display

Prompt	Significance
A	REG-cashier code
MG	MGR mode
VOID	VOID mode
SV	SRV mode
P1	PGM1 mode
P2	PGM2 mode
X1	X1 mode
XZ	Z1/X2/Z2 mode
VP	Validation required mode
SL	Slip print required mode
#	Non-add code entry required mode
LK	Cashier not specified
OP	OP X/2 mode
TR	Training mode
PR	Price entry compulsory (at subdept or PLU mark down)
S#	Mode secret code entry

* The symbol "OP" and "MG" are overlapped by cashier.

EX."OA":cashier-A at OP/Z mode

(2) Customer display

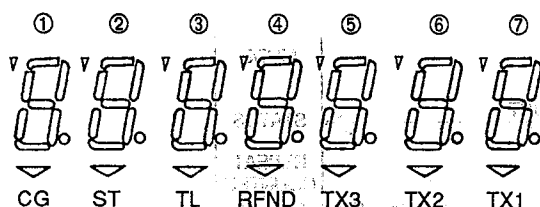


Fig. 4-5

4-6. Printer (M-2640)

- | | |
|---------------------------------------|---|
| 1. Printing system | : 2-station serial dot matrix printer |
| 2. Printing direction | : Bidirectional |
| 3. Printing speed | : Max. 2.2 lines/sec. |
| 4. Font | : 7 x 7 (half-dot) |
| 5. Printing capacity | : 21 columns for the receipt and
journal 47 columns for the
validation form |
| 6. Dimensions of printed
character | : 1.7(W) x 2.9(H) mm |
| 7. Character spacing | : 2.03 mm |
| 8. Line spacing | : 5.1 mm |
| 9. Receipt fast-feed speed | : Max. 25.7 lines/sec. |
| 10. Paper roll
(DPAPR1006CSZZ) | : 44.5±0.5 mm wide,
Max. 83 mm in diameter |
| 11. Validation form | : 130 mm or more wide, 60 mm or
more high |
| 12. Ink ribbon | : Ribbon cassette
PRBN-2320RCZZ |
| 13. Ribbon life | : 6 million characters |
| 14. Head life | : 43 million characters
(in the case of 2 dots/1 wire/1
character) |
| 15. Reliability | : MCBF 2 million lines
(except the head life) |
| 16. Stamp unit | : Prous rubber, 30(W) x 20(H) mm |
| 17. External dimensions | : 163.7(W) x 214.8(D) x 159.2(H) mm |

4-7. Drawer

- (1) Cash compartment
- Detachable from the drawer case
 - Paper money compartment not detachable from coin compartment
 - Available number of compartments
Canadian version : 6B/5C
 - Kinds of available compartment assembly

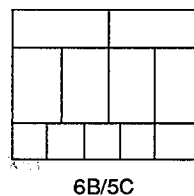


Fig. 4-6

(2) Keylock

- Key lock location
Front
- Key operation
Close : 180 = counterclockwise rotation
Open : 180 = clockwise rotation

4-8. Memorys

List of memory					[] : with option
Item	Q'ty	Totalizer	Counter	Preset	Note
GT	3	13d+s			GT1, GT2, GT3
	[4x3]	13d+s			(for IRC) CONS./RCV/SAVE/RESET
Z-counter	8		4d		(Z1) GENERAL, SERVER, HOURLY, PLU CASHIER, BALANCE (Z2) GENERAL, DAOLY-NET
	[2]		4d		(Z1) CONS. GENERAL (Z2) CONS. GENERAL
DEPT.		9d+s	7d+s		[max = 99]
				6d	Unit price
				1d	#-compulsory/not
				1d	VP-compulsory/not
				1d	TARE number (0~9)
				1d	SCALE enable/disable
				1d	SIF/SICS/normal
				1d	BR/HASH/normal
				1d	amount entry type
				1d	sign (- / +)
				1d	FS status
				3d	tax status
				2d	HALO
				16 or 8 char	Name (text)
				2d	Group (0~15)
				1d	Print-station (0, 1, 2)
PLU/SUB		9d+s	7d+s		(6-digit free code)
				6d	Unit price
				2d	Base Q'ty
				1d	TARE number (0~9)
				1d	SCALE compulsory/enable/disable
				1d	Type: PLU & subdept/PLU/subdept/inhibit
				2d	DEPT code
				1d	Sign (- / +)
				1d	FS status
PLU/SUB				3d	Tax status
				16 or 8 char	Name (text)
				1d	Print-station (0, 1, 2)
			7d+s		STOCK counter
				5x6d	LINK PLU
DISCOUNT (coupon)	2[+2]	9d+s	7d+s		
				6d	Unit price
				2d	HALO
				1d	Type (store/vender)
				1d	Sign (+ / -)

List of memory					[] : with option
Item	Qty	Totalizer	Counter	Preset	Note
DISCOUNT (coupon)				1d 3d 8 char	FS status Tax status Text
%	2[+2]	9d+s	7d+s		
				5d 2d 1d 1d 1d 3d 8 char	%-rate HALO Type (item/subtotal) Sign (+ / -) FS status Tax status Text
NET	3	9d+s			
				8 char	Text
TAXABLE SUBTOTAL	3	9d+s			Add on tax 1, 2, 3
				8 char	Text
GROSS TAX	4	9d+s			Add on tax 1, 2, 3/manual tax
				8 char	Text
REFUND TAX	4	9d+s			Add on tax 1, 2, 3/manual tax
				8 char	Text
NET TAX	4	9d+s			Add on tax 1, 2, 3/manual tax
				8 char 1d	Text Manual TAX HALO
FS TAX FORGIVE	3	9d+s			FS tax forgive 1, 2, 3
				8 char	Text
TAX TOTAL	1	9d+s			Total of text
				8 char	Text
COUPON PLU	1	9d+s	5d+s		Coupon like PLU
				8 char	Text
VOID	5	9d+s	5d+s		Item void/subtotal void/VOID mode item /HASH VOID/VOID mode transaction
				8 char	Text
REFUND	2	9d+s	5d+s		Item refund/HASH refund
				8 char	Text
NO SALE	1		5d+s		
				8 char	Text
VP COUNT	1		5d+s		
				8 char	Text
SLIP COUNT	1		5d+s		
				8 char	Text
PBAL COUNT	1		5d+s		
				8 char	Text
COVER COUNT	1		5d+s		
				8 char	Text
CUSTOMER COUNT	1		5d+s		
				8 char	Text

List of memory				[] : with option	
Item	Qty	Totalizer	Counter	Preset	Note
CASH	2	9d+s	5d+s		CASH/CASH2
				2d	HALO
				1d	SLIP compulsory/not
				1d	FOOTER print/not
				1d	#-code compulsory/not
				1d	VP compulsory/not
				3d	TAX delete/not
				1d	DRAWER not open/open
				1d	Amount tender compul./not
				8 char	Text
CHECK	1	9d+s	5d+s		CHECK
				2d	HALO
				1d	SLIP compulsory/not
				1d	FOOTER print/not
				1d	#-code compulsory/not
				1d	CHANGE disable/enable
				1d	VP compulsory/not
				3d	TAX delete/not
				1d	DRAWER not open/open
				1d	Amount tender compul./not
				8 char	Text
CHARGE	14	9d+s	5d+s		CHARGE 1~7 (GROSS) & (REFUND)
				2d	HALO
				1d	SLIP compulsory/not
				1d	FOOTER print/not
				1d	#-code compulsory/not
				1d	CHANGE disable/enable
				1d	VP compulsory/not
				3d	TAX delete/not
				1d	DRAWER not open/open
				1d	Amount tender compul./not
				8 char	Text
FS SALES	1	9d+s	5d+s		FS SALES TOTAL
				8 char	Text
RA	1	9d+s	5d+s		
				2d 8 char	HALO Text
PO	1	9d+s	5d+s		
				2d 8 char	HALO Text
CA/CHK	1	9d+s	5d+s		CHECK/CASHING TOTAL
				8d 8 char	Amount HALO Text

5. OPTIONS

5-1. ER-3250 system configuration

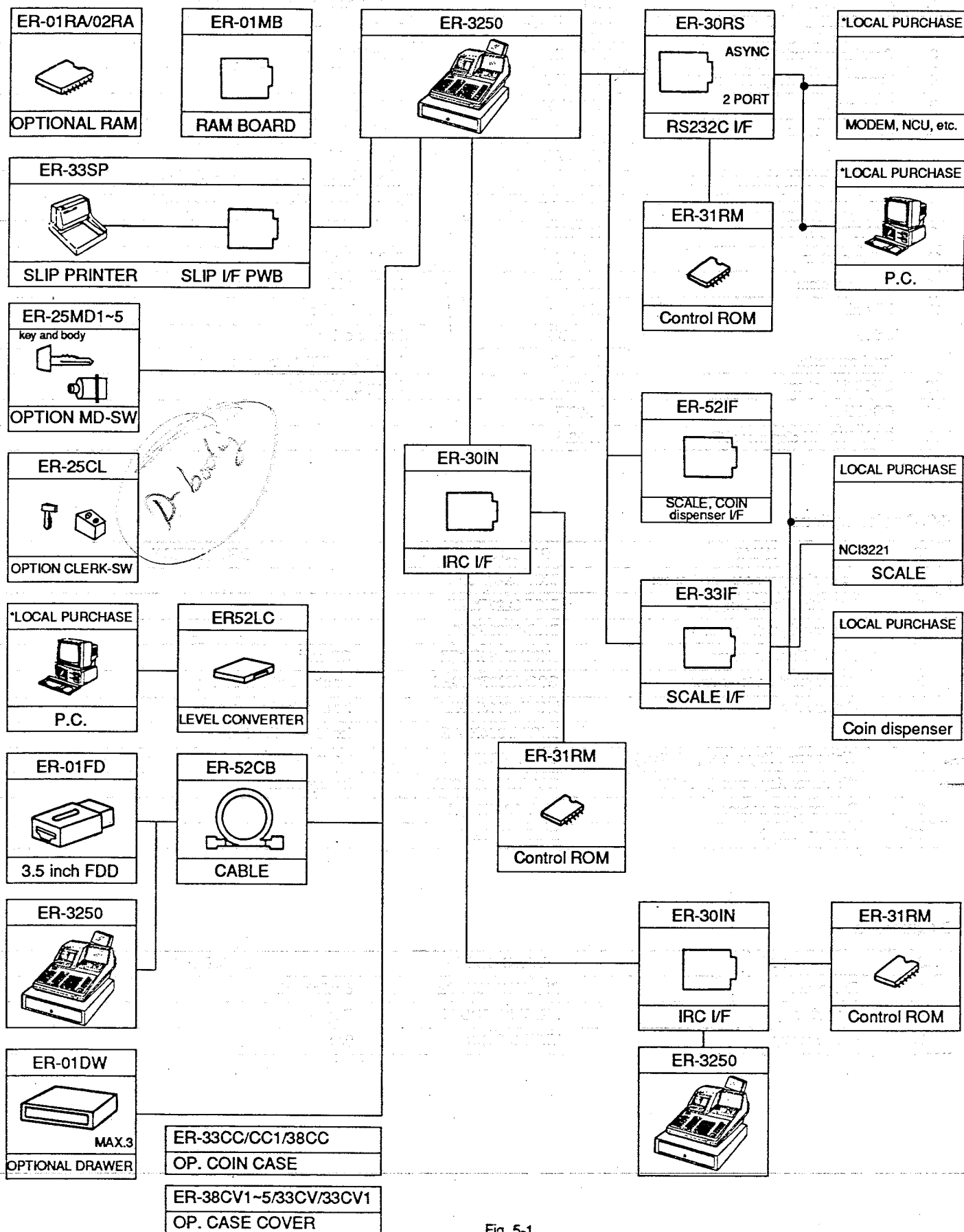


Fig. 5-1

5-2. Options

NO.	NAME	MODEL	DESCRIPTION
1.	SLIP PRINTER	ER-33SP	Printer and its interface inclusive
2.	Mode key variation	ER-25MD1~5	Mode lock key
3.	Cashier key variation	ER-25CL	Barrel lock key
4.	Expansion Drawer(MAX3 units)	ER-01DW	
5.	Coin case	ER-33CC1	6B/5C
6.	Coin case cover	ER-33CV	For ER-33CC
		ER-33CV1	For ER-33CC1
7.	EXPANSION MEMORY Board	ER-01MB	128KB memory Board with 5 ic sockets for ER-02RA
8.	EXPANSION RAM CHIP	ER-01RA/02RA	32KB RAM CHIP/128KB RAM CHIP
9.	CONTROL ROM	ER-31RM	
10.	in-line system	ER-30iN	IRC I/F Board
11.	on-line system	ER-30RS	RS232C I/F
12.	FD unit	ER-01FD	Preset Loader
	cable	ER-52CB	Loader cable
	level converter	ER-52LC	TTL ↔ RS232C level converter
13.	OPTION Battery	ER-30BT	Except, CANADA
14.	SCALE I/F	ER-33IF	
15.	SCALE/COIN dispenser I/F	ER-52IF	

5-3. Service Options

NO.	NAME	PARTS CODE	DESCRIPTION
1.	Journal paper near-end Sensor	DKIT-8226RCZZ	
2.	Validation form Sensor	DKIT-8227RCZZ	
3.	Drip-proof printer cover	DKIT-3390RCZZ	
4.	MODE Key grip cover	LKGIM7126RCZZ	OP only
5.	Water-proof switch cover	GCOVB6873RCZZ	for standard cashier key
6.	Service Key	LKGIM7113RCZZ	for standard mode Key
		LKGIM7094RCZZ	for ER-25MD/31MD
7.	Water-proof Key cover (ER-3250)	GCOVB6899RCZA	for key board
8.	Character Key cover (ER-3250)	GCOVB6909RCZA	for key board
9.	Drawer open sensor	DKIT-8331RCZZ	
10.	Drawer fixing kit	DKIT-8633RCZZ	

5-4. Supplies

NO.	NAME	PARTS CODE	DESCRIPTION
1.	Roll paper	DPAPR1006RCZZ	5 rolls/pack
2.	Ink ribbon	PRBN-2320CCZZ	Purple
3.	Ink for stamp	UINK-1001CCZZ	5cc

6. SRV (SERVICE) MODE

The SRV key is used for operating in the SRV mode.

6-1. SRV. reset (Program Loop Reset)

Used to return the machine back to its operational state after a lock-up has occurred.

Procedure

• Method 1

By unplugging and plugging in the AC cord in the SRV1 mode, the register returns to initial status even while in a locked status or any registration.

However, all the data before the reset is maintained.

* Note that CKDCIII is not reset.

• Method 2

1) Set the mode switch to SRV2 position.

2) Turn to SRV1 position from SRV2 position.

• Method 3

1) Set the mode switch to PGM2 position.

2) Unplug the AC power cord

3) While holding down JOURNAL FEED key and RECEIPT FEED key, plug in the AC cord.

* Note that CKDCIII is not reset.

SRV. RESET XXX

6-2. Master reset (All memory clear)

There are two methods for the way of master reset.

• MRS-1

Used to clear all memory contents and return machine back to its initial settings. return keyboard back to default. for default keyboard layout refer to page 3.

Procedure

1) Disconnect the AC cord from the wall outlet.

2) Set the MODE switch to the SRV position.

3) Connect the AC cord to the wall outlet, while depressing the JOURNAL FEED key

• MRS-2

Used to clear all memory and keyboard contents.

This reset returns all programming back to defaults. The keyboard must be enter by hand.

This reset is used if an application needs a different keyboard layout other than that supplied by a normal MRS-1.

Procedure

1) Disconnect the AC cord from the wall outlet.

2) Set the MODE switch to the SRV position.

3) Connect the AC cord to the wall outlet, while depressing the RECEIPT FEED key and the JOURNAL FEED key.

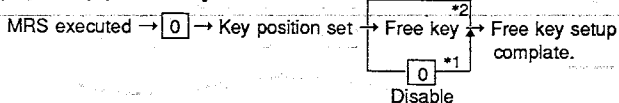
MASTER RESET XXX

Key position assignment:

* After the execution of MRS-2, only the RECEIPT FEED and JOURNAL FEED keys can remain effective on key assignment.

Any key can be assigned on any key position on the main keyboard.

[key setup procedure]



NOTES:

*1: When the 0 key is pressed, the key of the key number on display is disabled.

*2: Push the key on the position to be assigned. With this, the key of the key number on display is assigned to that key position.

Key number	Key name	Key number	Key name
1	Numeric key "0"	10	Numeric key "9"
2	Numeric key "1"	11	Numeric key "00"
3	Numeric key "2"	12	CL key
4	Numeric key "3"	13	Decimal point key
5	Numeric key "4"	14	@/For key
6	Numeric key "5"	15	SBTL key
7	Numeric key "6"	16	CA/AT key
8	Numeric key "7"		
9	Numeric key "8"		

6-3. Reading of the SRV mode program

[JOB code 900]

All parameters contained for the SRV mode as listed

Key operation.

900 → [@/FOR] → [CA/AT]

01/01/00 12:00AM
000#0001

#900

901# 0022
902# 0000
903# 0000
904# 0000
905# 0005
906# 0000
907# 0000
908# 0000
909# 0000
910# 2006
911# 0000
912# 0041
913# 1014
914# 0100
915# 0000
916# 0000
917# 0000
918# 2000
919# 0002
920# 0000
921# 0000
922# 0000
923# 0000
924# 0000
925# 0000

930# Z1 0000
931# CON Z1 0000
932# Z1 0000
933# Z1 0000
934# Z1 0000
935# Z1 0000
936# Z1 0000
937# Z2 0000
938# CON Z2 0000
939# Z2 0000

942#
GT2 \$0000000000.00
943#
GT3 \$0000000000.00

944# 0000

[JOB code 950]

The Key layout report is printed in SRV mode

Key operation

950 → [@ / FOR] → [CA / AT]

951 → [@ / FOR] → [CA / AT]

01/01/00 12:01AM

000#0002

#950

001	0	KEY	039
002	1	KEY	032
003	2	KEY	040
004	3	KEY	048
005	4	KEY	033
006	5	KEY	041
007	6	KEY	049
008	7	KEY	034
009	8	KEY	042
010	9	KEY	050
011	00	KEY	047
012	000	KEY	---
013	.	KEY	043
014	CL		051
015	@/FOR		035
016	SBTL		120
017	CA/AT		119
018	MDS ST		121
019	TRY ST		---
020	#		013
021	NS		009
022	SCALE		020
023	PLU/SB		053
024	RF SAL		002
025	L1		---
026	L2		---
027	L3		---
028	TAX1SF		044
029	TAX2SF		052
030	TAX3SF		---
031	TAX4SF		117
032	PRINT		006
033	SLIP		---
034	RCPT		005
035	TIP		---
036	VOID		008
037	RFND		001

038	% 1	011
039	% 2	018
040	% 3	---
041	% 4	---
042	(-) 1	012
043	(-) 2	019
044	(-) 3	---
045	(-) 4	---
046	TAX	036
047	CV CNT	---
048	TABLE#	---
049	AUTO	113
050	AUTO2	---
051	AUTO3	---
052	AUTO4	---
053	AUTO5	---
054	CA2	---
055	CHK	114
056	CH1	122
057	CH2	115
058	CH3	123
059	CH4	116
060	CH5	124
061	CH6	---
062	CH7	---
063	CONV	004
064	FB	017
065	CB	016
066	SRVC	015
067	DEPD	---
068	DEP RF	---
069	-----	---
070	RA	003
071	PD	010
072	SERV#	---

#951

001	001	063
002	002	064
003	003	065
004	004	066
005	005	067
006	006	068
007	007	071
008	008	072
009	009	073
010	010	074
011	011	075
012	012	076
013	013	079
014	014	080
015	015	081
016	016	082
017	017	083
018	018	084
019	019	087
020	020	088
021	021	089
022	022	090
023	023	091
024	024	092
025	025	095
026	026	096
027	027	097
028	028	098
029	029	099
030	030	100
031	031	037
032	032	---
033	033	---
034	034	---
035	035	---
036	036	---

132	132	---
153	153	---
154	154	---
155	155	---
156	156	---

[JOB code 970]

Files on the memory are listed.

Key operation

970 → [•] → [•] → [CA/AT]

01/01/00 12:10AM
000#0004

#970

×01% 00031 /00031 Table#/record count/used record count

×03% 00078 /00078

×05% 00031 004/00031

×06% 00049 /00049

×08% 00004 /00004

×09% 00031 /00031

×10% 00078 /00078

×12% 00031 004/00031 Table#/record count/Block count/
used record count

×13% 00032 /00000

×14% 00070 /00070

×47% 00030 /00000

×17% 00304 /00024

×19% 00005 /00000

×20% 00005 /00002

BANK 02 2800 Memory start bank/Address

BANK 07 2EC1 Empty memory start bank/Address

BANK 07 2FFF Memory end bank/Address

6-4. Service mode programming

The following are the key operation required for programming.

XXX → [•] → [•] → [A] [B] [C] [D] → [CA/AT]

(Job#)

Numeric entry

4 digits max

Details of [A] [B] [C] [D] will be discussed at each item description.

Key entry without depression of [•] key will affect the programmed contents.

[JOB#901]: MRS = 0022

901 → [•] → [•] → [CA/AT]

901-A,B = Not used (Fixed at "00")

901-C = Selection of tax mode by country (Fixed at "2")

Tax setting by country	901-C
U.S.A.	0
CANADA	2
SINGAPORE	4

#901-D = TAB setting

TAB setting	901-D
0	0
0.0	1
0.00	2
0.000	3

[JOB#902]: MRS = 0000

Key operation

902 → [•] → [•] → [CA/AT]

#902-A

1.Choice of RS232C option

2.Choice of SRN option

RS-232C	INLINE	902-A
No	No	0
	Yes	1
Yes	No	2
	Yes	3

#902-B.

1. Choice of CAT

2. CHIT receipt

1. CAT	2. CHIT receipt	902-B
No	No	0
	Yes	2
Yes	No	4
	Yes	6

#902-C.-Choice of slip printer Yes/No

Slip printer	902-C
NO	0
YES	2

#902-D.-Always 0

[JOB#903]: MRS = 0000

903 → [•] → [•] → [CA/AT]

#903-A: 1.Sio loader dumper baud rate

1. SIO baud rate	903-A
9600 bps	0
4800 bps	1
2400 bps	2
1200 bps	3
600 bps	4
300 bps	5

#903-B: 1. Choice of coin dispenser

1.Coin dispenser	903-B
No	0
Yes	1

#903-C: 1. Entry of Scale

2. Entry of tare

3. Unit of weight for the scale

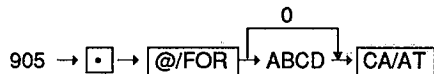
1.Entry of scale	2.Entry of tare	3.Unit of weight	903-C
Manual	Disallowed	LB	0
		KG	1
	Allowed	LB	2
		KG	3
Automatic	Disallowed	LB	4
		KG	5
	Allowed	LB	6
		KG	7

#903-D: 1.Type of food stamp

1. Type of food stamp	903-D
No food stamp	0
Tax not payable in food stamps	1
Tax payable in food stamps	2
Food stamp forgiveness	3

[JOB#904] : Not used

[JOB#905] : MRS = 0005



905-A = 1. Taxable 4 subtotal printed on X/Z report

2. Gross tax4 and Refund tax4 total printed on X/Z report

3. Net tax4 total printed on X/Z report

1. Taxable 4 subtotal	2. Gross tax4 & Refund tax4 total	3. Net tax4 total	905-A
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

905-B = 1. Tax amount printed on receipt when GST is VAT.

2. Tax amount printed when tax amount is "0".

1. GST for VAT	2. Tax amount at "0"	905-B
Print	Print	0
	Skip	1
Skip	Print	2
	Skip	3

905-C = GST EXPT printed on report

GST EXPT printed	905-C
Print	0
Skip	1

905-D = Tax method

	Tax4 method (GST)	Tax3 method GST PST		Tax2,1 method (PST)	905-D
Type ①	VAT	VAT		Tax on Tax	0
Type ②				Tax on Base	1
Type ③	VAT			Tax on Tax	2
Type ④				Tax on Base	3
Type ⑤	Add on Tax			Tax on Tax	4
Type ⑥				Tax on Base	5
Type ⑦	Add on Tax	VAT		Tax on Tax	6
Type ⑧				Tax on Base	7
Type ⑨	Add on Tax	Add on Tax		Tax on Tax	8
Type ⑩				Tax on Base	9

[JOB#906] MRS = 0000

Key operation



#906-A: 1. Print dept and PLU number on receipt

2. Credit figure in stock counter

1.Print dept and PLU numbers	2.Credit figure in stock	906-A
No	Enabled unconditionally	0
	Operation enabled though error display	1
	Disable	2
Yes	Enabled unconditionally	4
	Operation enabled though error display	5
	Disable	6

#906-B: 1.Bottle retrun function

2.Hash departments

1. Bottle return	2. Hash departments	906-B
Disable	Disable	0
	Enable	2
Enable	Disable	4
	Enable	6

#906-C: 1.Split price quantity count

1. Split pricing counting	906-C
Quantity	0
Package	4

#906-D: 1.Fractional quantity

1.Fractional quantity	906-D
No decimal places	0
3-digit decimal places	1

[JOB#907] MRS = 0000

#907-A,B,C: Not used.(Fixed to "000".)

#907-D: Void mode Enable/disable

Void mode	907-D
Enable	0
Disable	2

[JOB#908] MRS = 0000

#908-A: GT print on Z report

GT1(NET)	GT2(+)	GT3(-)	908-A
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

#908-B: GT print on X report

GT1(NET)	GT2(+)	GT3(-)	908-B
Skip	Skip	Skip	0
		Print	1
	Print	Skip	2
		Print	3
Print	Skip	Skip	4
		Print	5
	Print	Skip	6
		Print	7

#908-C: 1. Add void-mode transaction data to hourly total
2. Resetting of consecutive number in Z1 resetting

1. Add void-mode transaction to hourly totals	2. Resetting of consecutive No.in Z1 resetting	908-C
Disable	No	0
	Yes	1
Enable	No	4
	Yes	5

#908-D: 1.Printing X/Z report Journal only/Receipt & Journal
2.Z1 resetting that resets GT Enable/Disable

1.Printing X/Z report	2.GT resetting at-Z1	908-D
Receipt & Journal	Disable	0
	Enable	1
Journal	Disable	4
	Enable	5

[JOB#909] MRS = 0000

#909-A,B: Not used(Fixed to "00")

#909-C: 1.Printing of data in void-mode totalizer on Z2 report
2.Printing of data in void-mode totalizer on Z1 report

1. Void-mode totalizer on Z2 printing	2. Void-mode totalizer on Z1 printing	909-C
Enable	Enable	0
	Disable	2
Disable	Enable	4
	Disable	6

#909-D: Not used (Fixed to "0")

[JOB#910] MRS = 2006

A. 1.Include/Exclude tax in clerk sales total
2.Include/Exclude tax in cashier sales total

Clerk	Cashier total	A
Exclude tax	Tax excluded	0
	Tax included	2
Include tax	Tax excluded	4
	Tax included	6

#910-B: 1.Cashier code entry Compulsory/Noncompulsory

1. Cashier code entry	910-B
Noncompulsory	0
Compulsory	1

#910-C: 1. Clerk code entry Compulsory/Noncompulsory on PBLU entries.

1. Clerk code entry	910-C
Noncompulsory	0
Compulsory	2

#910-D: 1.Cashier key type
2.Number of cashiers
3.Cashier code

1.Cashier key type	2.Number of cashiers	3.Cashier code	910-D
Stay down type	4-cashier	Disable	0
		Enable	1
	2-cashier	Disable	2
		Enable	3
Barrel-lock type	4-cashier	Disable	4
		Enable	5
	2-cashier	Disable	6
		Enable	7

[JOB#911] MRS = 0000

#911-A: 1.Fraction treatment

1. Fraction treatment	911-A
Round off	0
Round up	1
Round down	2

#911-B, C: Not used (Fixed to "00")

#911-D: 1.Choice of receipt header line format

1. Header line format	911-D
Normal	0
Double size	2
2.lines	4

[JOB #912] MRS = 0000

#912-A: 1.Date print format

Data format	912-A
Month/Day/Year	0
Day/Month/Year	1
Year/Month/Day	2

#912-B: 1.Validation print message printing on Slip printer

2.Time system

1.VP message printing on Slip	2.Time system	912-B
Check only	12H	0
	24H	1
Check & Charge	12H	4
	24H	5

#912-C: 1.After transaction receipt format

2.Copy receipt

3.Footer print control

1.After transaction receipt	2.Copy receipt	3.Footer print control	912-C
Total only	No	Any key	0
		Specific key	1
	Yes	Any key	2
		Specific key	3
Detail	No	Any key	4
		Specific key	5
	Yes	Any key	6
		Specific key	7

#912-D: 1.Logo message control

1.Logo message control	912-D
3-line header instead of stamp	0
Stamp only	1
Stamp and 3-line footer	2
6-line header instead of stamp	3

[JOB#913] MRS = 1014

#913-A: 1.Tax printing when taxable subtotal is zero

2.VP format

3.Content of TOTAL VP amount

VP=Validation print

1.Tax printing	2.VP format	3.VP amount	913-D
Disable	Data & amount	Total amount	0
		Tendered amount	1
	Machine# & amount	Total amount	2
		Tendered amount	3
Enable	Date & amount	Total amount	4
		Tendered amount	5
	Machine# & amount	Total amount	6
		Tendered amount	7

#913-B: 1.Printing of [SBTL]

2.Printing of [MDSE SBTL]

3.Escape the compulsion of Slip and VP

NOTE: Must turn to MGR mode and depress

[.], [PRINT] keys to escape validation

[.], [SLIP] keys to escape slip printing

1.SBTL Print	2. MDSE SBTL Print	3. Escape the compulsion of slip	913-B
No	No	Disable	0
		Enable	1
	Yes	Disable	2
		Enable	3
Yes	No	Disable	4
		Enable	5
	Yes	Disable	6
		Enable	7

#913-C: 1.Buzzer off 2 sec after lock error.

2.Key buffer cleaning at the end of transaction.

Error beep	Key buffer cleaning at the end of transaction	913-C
2-second off	Disable	0
	Enable	1
Continu	Disable	2
	Enable	3

#913-D: 1. Drawer closing operation compulsory, Requires drawer

open sensor kit (DKIT-8331RCZZ)

2. All lock or lock and one shot

3. Key catch sound

Drawer closed compulsory	Error mode	Key catch sound	913-D
Disable	All lock error	Enable	0
		Disable	1
	Lock and one shot	Enable	2
		Disable	3
Enable	All lock error	Enable	4
		Disable	5
	Lock and one shot	Enable	6
		Disable	7

[JOB#914] MRS = 0100

- #914-A: 1. Receipt issuing at no-sale
2. [NS] key separation from [CA/AT] key for no sale function Yes/No
3. Tax delete operation Enable/Disable

1. Receipt issuing at no-sale	2. [NS] key separation	3. Tax delete	914-A
Enable	Yes	Disable	0
		Enable	1
	No	Disable	2
		Enable	3
Disable	Yes	Disable	4
		Enable	5
	No	Disable	6
		Enable	7

#914-B: No-sale after NON ADD code entry

No-sale after # entry	914-B
Disable	0
Enable	1

#914-C: Not used (Fixed to "0")

- #914-D: 1. Manual tax Disable/Enable
2. CHECK, CASHING Enable/Disable
3. Non-add code entry Disable/Enable

1. Manual tax	2. CHECK, CASHING	3. Non-add code entry	914-D
Enable	Disable	Enable	0
		Disable	1
	Enable	Enable	2
		Disable	3
Disable	Disable	Enable	4
		Disable	5
	Enable	Enable	6
		Disable	7

[JOB#915] MRS = 0000

#915-A: 1. Currency symbol

1. Currency symbol	915-A
" \$ "	0
" * "	2

#915-B: 1. Choice of direct/media tendering mode for paid out

1. PO	915-B
Media tendering	0
Direct	1

#915-C: 1. ST%, ST(-) operation only once/As many times needed
2. RA type

1. ST%, ST(-) operation	2. RA media tendering	915-C
Unlimited	With tendering	0
	Direct	1
Once only	With tendering	2
	Direct	3

[JOB#916] MRS = 0000

- #916-A: 1. CL key displays all 16 characters after item entry
2. Print format when text and amount overlaps in REG mode

1. 16 characters to be displayed	2. Print format	916-A
No	Truncate text	0
	2 line print	1
Yes	Truncate text	4
	2line print	5

#916-B: Not used (Fixed "0")

- #916-C: 1. Subtotal entry compulsory/non-compulsory
2. Food stamp subtotal entry before food stamp tender compulsory/non-compulsory

1. Compulsory subtotal entry	2. Food stamp subtotal entry	916-C
Disable	Compulsory	0
	Non-compulsory	1
Enable	Compulsory	2
	Non-compulsory	3

- #916-D: 1. Coupon PLU printing on X/Z report
2. Net sales subtotal printing on X/Z report
3. CHECK change total printing on X/Z report

1. Print minus PLU's on general report	2. Print net sales SBTL on general report	3. Print CHK CHANGE on general report	916-D
Enable	Enable	Enable	0
		Disable	1
	Disable	Enable	2
		Disable	3
Disable	Enable	Enable	4
		Disable	5
	Disable	Enable	6
		Disable	7

[JOB#917] MRS = 0000

- #917-A: 1. Taxable 1 subtotal on X/Z report: Print or Skip
2. Gross Tax 1 and refund Tax 1 total on X/Z report: Print or Skip
3. Net Tax 1 total on X/Z report: Print or Skip

Taxable 1 subtotal on X/Z report	Gross Tax1 and refund Tax1 total on X/Z report	Net Tax1 total on X/Z report	917-A
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

- #917-B: 1. Taxable 2 subtotal on X/Z report: Print or Skip
2. Gross Tax 2 and refund Tax 2 total on X/Z report: Print or Skip
3. Net Tax 2 total on X/Z report: Print or Skip

Taxable 2 subtotal on X/Z report	Gross Tax2 and refund Tax2 total on X/Z report	Net Tax2 total on X/Z report	917-B
Print	Print	Print	0
		Skip	1
	Skip	Print	2
Skip	Print	Skip	3
		Print	4
	Skip	Skip	5
		Print	6
		Skip	7

- #917-C: 1. Taxable 3 subtotal on X/Z report: Print or Skip
 2. Gross Tax 3 and refund Tax 3 total on X/Z report: Print or Skip
 3. Net Tax 3 total on X/Z report: Print or Skip

Taxable 3 subtotal on X/Z report	Gross Tax3 and refund Tax3 total on X/Z report	Net Tax3 total on X/Z report	917-C
Print	Print	Print	0
		Skip	1
	Skip	Print	2
Skip	Print	Skip	3
		Print	4
	Skip	Skip	5
		Print	6
		Skip	7

- #917-D: 1. Total Tax amount on X/Z report: Print or Skip
 2. Gross manual Tax and refund manual Tax on X/Z
 3. Net manual Tax total on X/Z report: Print or Skip

Total Tax Amount	Gross manual Tax and Refund manual Tax on X/Z report	Net manual Tax total on X/Z report	917-D
Print	Print	Print	0
		Skip	1
	Skip	Print	2
Skip	Print	Skip	3
		Print	4
	Skip	Skip	5
		Print	6
		Skip	7

[JOB#918] MRS = 2000

- #918-A: 1. R/J and Slip printing of text of a tied PLU inset menu
 2. Direct non-tender finalization after under tender

1. Printing of text of a tied promo PLU	2. Direct finalization after under tender	918-A
Yes	Disable	0
	Enable	2
No	Disable	4
	Enable	6

#918-B: Not used (Fixed "0")

#918-C: 1. Slip printing of Guest check

1. Slip printing of guest check	918-C
Non compulsory	0
Compulsory	4

#918-D: 1. Slip printing of PBAL amount and new balance amount on Gest check

1. Slip printing of PBAL amount	918-D
Yes	0
No	4

IF PB LOOKUP NO GO = 4000
 MEAL IS CHARGED +
 [JOB#919] MRS = 0002 ITEMS ADDED TO BALANCE

- 919-A: 1. PBLU method selection
 2. Choice of print or skip Slip header when re-order
 3. PBLU code entry at re-order compulsory/not.

PBLU	Slip header	PBLU code at re-order	919-A
PBLU LOOK UP	Print	Non-compulsory	0
		Compulsory	1
	Skip	Non-compulsory	2
		Compulsory	3
Manual PB/CB	Print	Non-compulsory	4
		Compulsory	5
	Skip	Non-compulsory	6
		Compulsory	7

919-B: 1. Check/Not to check clerk handling quest check

2. Check/Not to check C/D at PB,CB entry

3. Choice of manual/auto generation GUEST check number

Clerk No.	Check digits	Guest check No.	919-B
No-check	No-check	Manual	0
		Auto	1
	Check	Manual	2
		Auto	3
Check	No-check	Manual	4
		Auto	5
	Check	Manual	6
		Auto	7

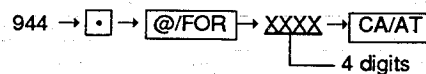
919-C: 1. Choice to print the PLU whose amount is zero.

2. Choice of compulsory/non compulsory PB/CB registration

3. Choice of amount print or skip print when PLU unit price is 0

PLU whose amount is zero	PB/CB	Amount print	919-C
Print	Non compulsory	Skip	0
		Print	1
	Compulsory	Skip	2
		Print	3
Skip	Non compulsory	Skip	4
		Print	5
	Compulsory	Skip	6
		Print	7

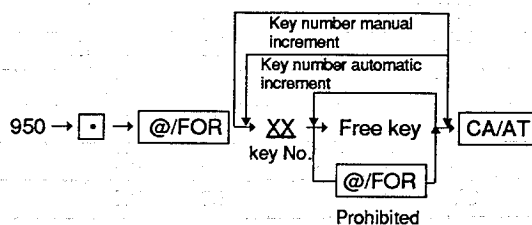
[JOB#944]PGM2 secret code presetting MRS = 0000



NOTE:When the secret code "0" is programmed,the secret code entry is be inhibited.

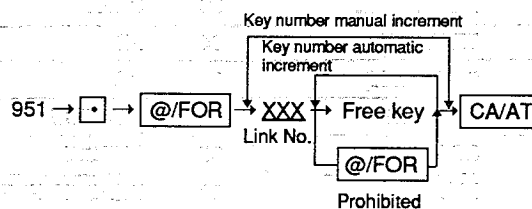
[JOB#950]

Free key layout(except for department)



[JOB#951]

Free key layout(department key and direct PLU key)



Sets the keys that are used for the department keys and direct PLU keys.

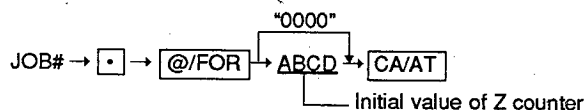
To assign the key,enter the key number first and then push the key to be assigned for either the department or direct PLU.

919-D: 1.Conversion SBTL printing
 2.PBLU system
 3.Foregh currency format

1.Conversion SBTL	2.PBLU system	3.Foreign currency	919-D
Yes	Guest check balance	No	0
		Omit digits lower than TAB position	1
	Charge posting	No	2
		Omit digits lower than TAB position	3
No	Guest check balance	No	4
		Omit digits lower than TAB position	5
	Charge posting	No	6
		Omit digits lower than TAB position	7

[JOB#930~939] MRS = 0000

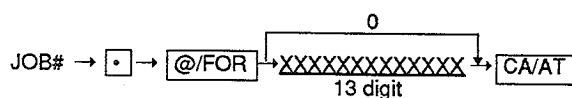
RESET REPORT COUNTER



JOB #	Function
930	Z1 report counter
931	Consoli Z1 report counter
932	Clerk Z1 report counter
933	Hourly Z1 report counter
934	PLU Z1 report counter
935	Cashier Z1 report counter
936	PBLU Z1 report counter
937	Z2 general report counter
938	Consoli Z2 report counter
939	31 day daily net Z2 report counter

[JOB#942,943]

GT COUNTER PRESETTING



JOB #	Function
942	GT2(Positive GT)
943	GT3(Negative GT)

Note : GT1 is obtained by calculation

: Equation:GT1=GT2-GT3

FUNCTION KEY LIST

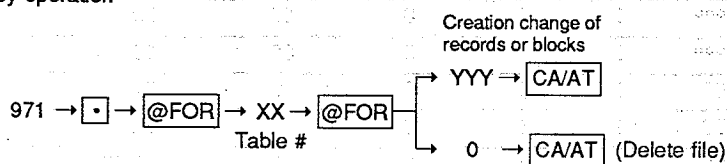
Key No.	Key	Key No.	Key
1	0 KEY	46	TAX
2	1 KEY	47	COVER COUNT
3	2 KEY	48	TABLE#
4	3 KEY	49	AUTO
5	4 KEY	50	AUTO2
6	5 KEY	51	AUTO3
7	6 KEY	52	AUTO4
8	7 KEY	53	AUTO5
9	8 KEY	54	CASH2
10	9 KEY	55	CHECK
11	00 KEY	56	CH1
12	000 KEY	57	CH2
13	DECIMAL POINT	58	CH3
14	CLEAR	59	CH4
15	@/FOR	60	CH5
16	SUB TOTAL	61	CH6
17	CA/AT	62	CH7
18	MDSE SBTL	63	CONV
19	TRAY SBTL	64	PB
20	# (Non-add)	65	CB
21	NO SALE	66	SERVICE
22	SCALE	67	DEPOSIT
23	PLU/SUB	68	DEPOSIT REFUND
24	REFUND SALE	69	
25	L1	70	RA
26	L2	71	PO
27	L3	72	CLERK#
28	TAX1 SHIFT		
29	TAX2 SHIFT		
30	TAX3 SHIFT		
31	TAX4 SHIFT		
32	PRINT		
33	SLIP		
34	RCPT		
35	TIP		
36	VOID		
37	REFUND		
38	%1		
39	%2		
40	%3		
41	%4		
42	(-)1		
43	(-)2		
44	(-)3		
45	(-)4		

R	J	22	30	38	46	54	62	70	78	86	94	102	110	118	126
7	14	21	29	37	45	53	61	69	77	85	93	101	109	117	125
6	13	20	28	36	44	52	60	68	76	84	92	100	108	116	124
5	12	19	27	35	43	51	59	67	75	83	91	99	107	115	123
4	11	18	26	34	42	50	58	66	74	82	90	98	106	114	122
3	10	17	25	33	41	49	57	65	73	81	89	97	105	113	121
2	9	16	24	32	40	48	56	64	72	80	88	96	104	112	120
1	8	15	23	31	39	47	55	63	71	79	87	95	103	111	119

Fig. 6-1

File programming. (File creation, deletion, change of the number of records or blocks).

Key operation



This operation is performed to increase or reduce the number of records in a file or to create or delete a file.

Table No.	File name
1	DEPT *2 (8 char. alpha)
2	DEPT *2 (16 char. alpha)
6	HOURLY
7	CLERK
8	CASHIER
9	TERM DEPT *1
11	TERM CLERK *1
12	TERM CASHIER *1
13	DAILY NET
14	REG BUFFER
15	GROSS MARGIN *1
47	PBLU
17	PLUI *2
18	PLUII *2
19	LINK PLU
20	Promo PLU
99	ALL OF TERM FILE

NOTE: 1.*1= Creat (same record as master file) or delete.
2.*2= Creat either type I or II.

FILE TABLE

(THE FILE OF 0 ARE CREATED AT THE MRS)

Table No.	File name	File No.	No. of record		No. of block		Lable size	Record length	Memory size
			Default	Max	DEF.	Max			
1	DEPT (TEXT 8ch)	01	31	99	1	1	0	25	775/2475
2	DEPT (TEXT 16ch)	01	0	99	1	1	0	33	0/3269
3	TRANSACTION	02	78	78	1	1	0	8	624
4	CLERK TRANS.	03	21	21	0	99	0	8	0/16632
5	CASHIER TRANS.	04	31	31	4	4	0	8	992
6	HOURLY	05	49	49	1	1	0	8	392
7	CLERK PRESET	06	0	99	1	1	0	16	0/1584
8	CASHIER PRESET	07	4	4	1	1	0	13	52
9	TERM DEPT	08	35	99	1	1	0	9	315/891
10	TERM TRANS.	09	78	78	1	1	0	8	624
11	TERM CLERK	10	21	21	0	99	0	8	0/16632
12	TERM CASHIER	11	31	31	4	4	0	8	992
13	DAILY NET	12	32	32	1	1	3	11	352
14	REC BUFFER	13	70	255	1	1	0	32	2240/8160
15	GROSS MARGIN	14	0	99	1	1	0	7	0/693
47	PB LOOK UP	15	30	***	1	1	2	140	4200
17	PLU (TEXT 8ch)	16	304	***	1	1	3	32	9728/
18	PLU (TEXT 16ch)	16	0	***	1	1	3	40	0/
19	LINK PLU	17	5	***	1	1	3	18	90
20	PROMO PLU	18	5	***	1	1	3	33	165
21	CONSOL. DEPT	19	0	99	1	1	0	9	0/891
22	CONSOL. TRNS.	20	0	78	1	1	0	8	0/624
23	CONSOL. CLERK	21	0	21	0	99	0	8	0/16632
24	CONSOL. CASHIER	22	0	31	4	4	0	8	0/992
25	CONSOL. HOURLY	23	0	49	1	1	0	8	0/392
26	CONSOL. DAILY. NET.	24	0	32	1	1	3	11	0/352
27	CONSOL. PLU	25	0	***	1	1	3	12	0/
28	SAVE DEPT	26	0	99	1	1	0	9	0/891
29	SAVE TRNS.	27	0	78	1	1	0	8	0/624
30	SAVE CLERK	28	0	21	0	99	0	8	0/16632
31	SAVE CASHIER	29	0	31	4	4	0	8	0/992
32	SAVE HOURLY	30	0	49	1	1	0	8	0/392
33	SAVE PLU	31	0	***	1	1	3	12	0/
34	RECEIVE DEPT	32	0	99	1	1	0	9	0/891
35	RECEIVE TRNS.	33	0	78	1	1	0	8	0/624
36	RECEIVE CLERK.	34	0	21	0	99	0	8	0/16632
37	RECEIVE CASHIER	35	0	31	4	4	0	8	0/992
38	RECEIVE HOURLY	36	0	49	1	1	0	8	0/392
39	RECEIVE DAILY NET	37	0	32	1	1	3	11	0/352
40	RECEIVE PLU	38	0	***	1	1	3	12	0/
41	RECEIVE PBLU	39	0	***	1	1	2	15	0/
42	RCV CLERK PRESET	40	0	99	1	1	0	16	0/1584
43	RCV CASHIER PRESET	41	0	4	1	1	0	13	0/52

* 44 KP BUFFER (MUST PROGRAM FOR KITCHEN PRINTER)

Fig. 6-2

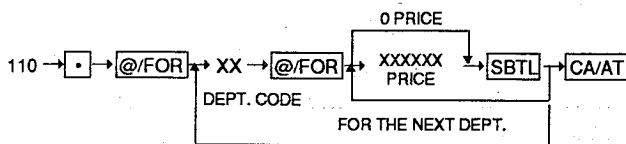
*** = 999

7. PROGRAM (PGM2/PGM1) MODE

7-1. Programming

[JOB#110]

PROGRAMMING OF DEPT.PRICE



XXXXXX: 0~999999

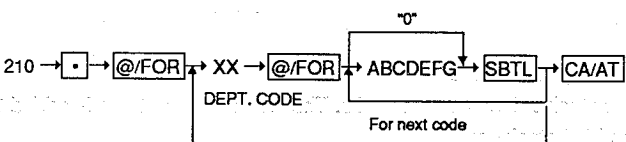
Preset price is max. 6 digits.

Price can be programmed for each dept. If this programming is performed, the ECR is automatically programmed to allow preset price entry even when it has been programmed to allow preset price entry in dept. function programming (JOB#210).

MRS = 0.00

[JOB#210]

DEPT. FUNCTION PROGRAMMING



XX: DEPT. code (01~99)

A: Non-add code entry	210-A
Non compulsory	0
Compulsory	1

B: Item validation printing	210-B
Non compulsory	0
Compulsory	1

C: Tare table number	210-C
No tare function	0
1 ~ 9	1 ~ 9

D: Scale entry	210-D
Inhibited	0
Allowed	1

E: SICS Function	210-E
Normal	0
Single item cash sale	1
Single item finalize	2

F: Selection of the group	210-F
Normal	0
Hash	1
Bottle return	2

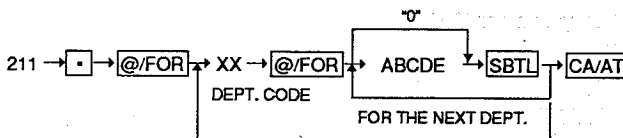
G: Amount entry type	210-G
Inhibited	0
Open	1
Preset	2
Open and preset	3

* A selection of the group "Bottle return" is inhibited when the bottle return function is programmed as inhibited in SRV mode (906-B).

A selection of the group "Hash" is inhibited when the hash function is programmed as disabled in SRV mode (906-B).

[JOB#211]

DEPT. TAX STATUS AND SIGN PROGRAMMING



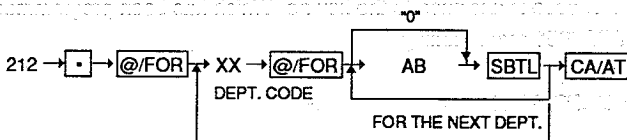
This programming is intended to decide the sign, tax status, and food stamp status.

A: SIGN -	= 1
+	= 0
B: Taxable by TAX4	= 1
Non-taxable 4	= 0
C: Taxable by TAX 3	= 1
Non-taxable 3	= 0
D: Taxable by TAX 2	= 1
Non-taxable 2	= 0
E: Taxable 1	= 1
Non-taxable 1	= 0

MRS = 00000

[JOB#212]

PROGRAMMING OF THE DIGIT LIMITATION FOR DEPTS.



A: MAX DIGIT FIGURE = 1~9

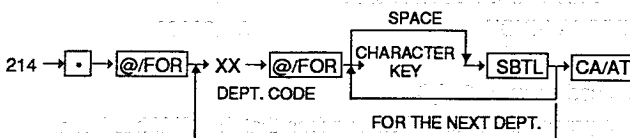
B: NO. OF ZEROS FOLLOWING THE MAX. = 0~7

MRS = 17

* "17" stands for 10000000. Up to 9999999 can be entered as amount.

[JOB#214]

DEPT. TEXT PROGRAMMING

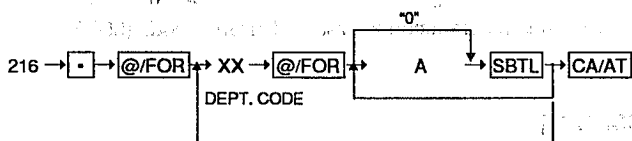


Characters can be entered by using alphabetic keys or numeric keys.

Please refer to section 8-4 character assignment method. (Page 48)

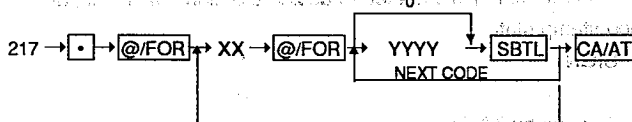
MRS = DPT. XX

[JOB#216]
PROGRAMMING OF DEPT. Group.



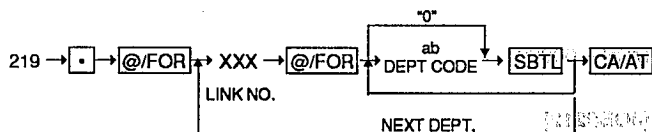
DEPT. code: 01~99
A: Group number (0~15)
MRS = 0

[JOB#217]
GROSS MARGIN RATE



XX: DEPT. code (01~99 max)
YYY: % rate (0~9999)

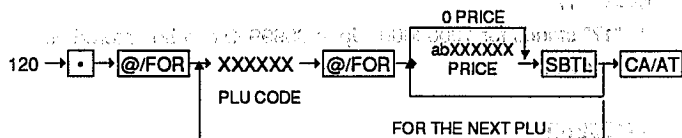
[JOB#219]
LINK NUMBER PROGRAMMING FOR DIRECT DEPT. KEYS



DEPT. code is assigned to the key no. Which has been programmed in JOB#951 programming.

ab: DEPT CODE = 1~99

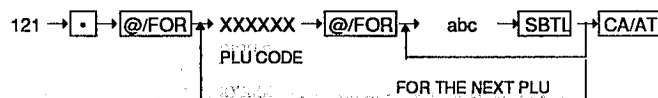
[JOB#120]
PRICE PROGRAMMING FOR PLU'S



ab: SPLIT PRICING BASE Q'TY = 0~99
XXXXXX: PRICE = 0~999999

PLU code is max. 6 digits.
Price programming for a PLU requires that the PLU has been created in JOB#121.
MRS = 0.00

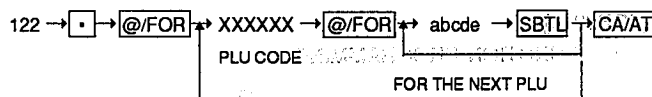
[JOB#121]
PROGRAMMING OF DEPARTMENTS TO BE ASSOCIATED WITH PLU'S



a: DELETE/PLU/SUB-DEPT/INHIBIT = 3/2/1/0
bc: DEPT. CODE = 1~99

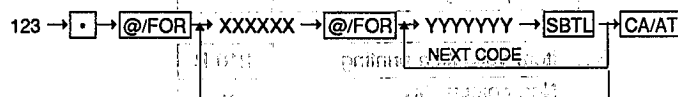
"INHIBIT" means that the PLU code and the contents of programming remain valid, but that any entry cannot be made for the PLU.
MRS = 201

[JOB#122]
PROGRAMMING OF PLU STOCK (ADD)



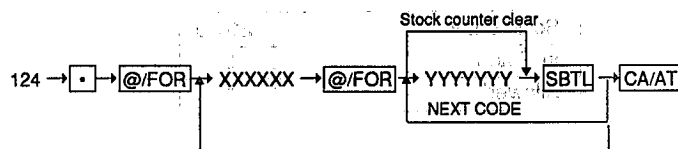
abcde: Stock value = 1~9999999
The stock value is max. 7 digits. The stock value entered is added to the PLU stock counter.

[JOB#123]
PROGRAMMING OF PLU STOCK (SUB)



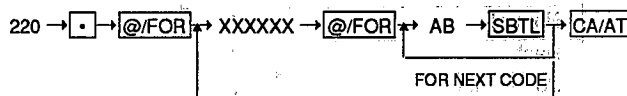
XXXXXX: PLU code (1~9999999)
YYYYYYY: PLU stock (1~9999.999)

[JOB#124]
PROGRAMMING OF PLU STOCK (OVER WRITE)



XXXXXX: PLU code (1~9999999)
YYYYYYY: PLU stock (0~9999.999)

[JOB#220]
PLU FUNCTION PROGRAMMING



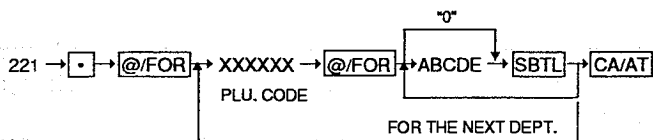
XXXX: PLU code (1~9999)

A: Tare table number	220-A
No tare function	0
1 ~ 9	1 ~ 9

B : Scale	220-B
Inhibit	0
Enable	1
Compulsory	2

[JOB#221]

PLU MODIFY PROGRAMMING



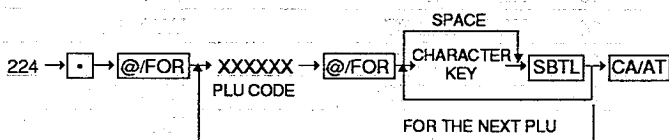
This programming is intended to decide the sign, tax status, and food stamp status for PLU's

A: SIGN -	= 1
+	= 0
B: Taxable by TAX4	= 1
Non-taxable 4	= 0
C: Taxable by TAX 3	= 1
Non-taxable 3	= 0
D: Taxable by TAX 2	= 1
Non-taxable 2	= 0
E: Taxable by TAX 1	= 1
Non-taxable 1	= 0

MRS = 0000

[JOB#224]

PLU TEXT PROGRAMMING



Characters can be entered by using alphabetic keys or numeric keys.

Please refer to section 8-4 for character assignment method.

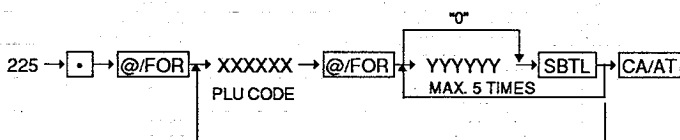
(Page ??)

UP TO 8 (OR 16) CHARACTERS CAN BE PROGRAMMED.

MRS = PLU-XXXXXX

[JOB#225]

LINKED PLU PROGRAMMING



XXXXXX : PLU code 1~999999

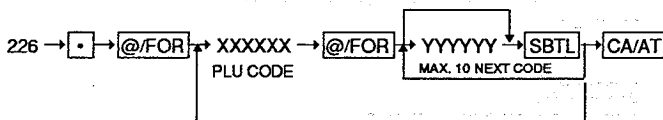
YYYYYY : Linked PLU code 1~999999

When the "ST" key is pressed without entering any number as the first PLU code, the previous data is cleared.

PLU codes should already be defined when they are used in programming here.

[JOB#226]

PROMOTION PLU PROGRAMMING



XXXXXX : PLU code 1~999999

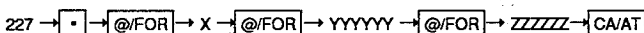
YYYYYY : Promo PLU code 1~999999

When the "ST" key is pressed without entering any number as the first PLU code, the previous data is cleared.

The PLU code (XXXXXX) can not be set to the PLU code (YYYYYY).

[JOB#227]

PLU LEVEL PROGRAMMING (RANGE)



X : PLU level No. 1~3

YYYYYY : Start PLU code 1~999999

ZZZZZ : End PLU code 1~999999

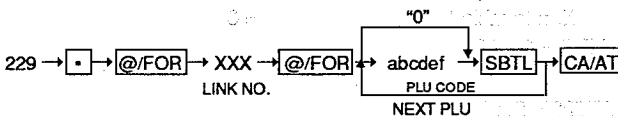
MRS = L1 : 000001 — 000304

L2 : 000101 — 000200

L3 : 000201 — 000300

[JOB#229]

LINK NUMBER PROGRAMMING FOR DIRECT PLU KEYS

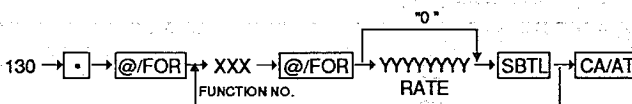


PLU code is assigned to the key no. Which has been programmed in JOB#951 programming.

abcdef : PLU CODE = 1~999999

[JOB#130]

RATE PROGRAMMING



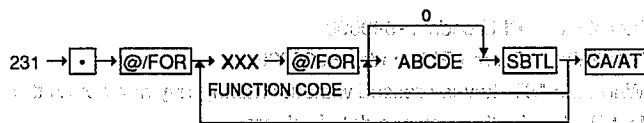
XXX : %1	= 5
%2	= 6
%3	= 7
%4	= 8
Θ1	= 1
Θ2	= 2
Θ3	= 3
Θ4	= 4
CONVERSION	= 54
TIP	= 78

RATE : 0.00~100.00 (%1~%4, TIP)
 0.00~9999.99 (Θ)
 0.000~99999.999 (CONVERSION)

MRS = 0

[JOB#231]

MISC KEY PROGRAMMING



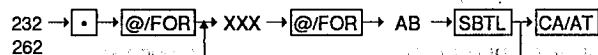
This programming is intended to decide the sign, tax status, and food stamp status for misc keys.

XXX: %1 = 5
 %2 = 6
 %3 = 7
 %4 = 8
 Θ1 = 1
 Θ2 = 2
 Θ3 = 3
 Θ4 = 4
 A: SIGN - = 1
 + = 0
 B: Taxable by TAX4 = 1
 Non-taxable 4 = 0
 C: Taxable by TAX 3 = 1
 Non-taxable 3 = 0
 D: Taxable by TAX2 = 1
 Non-taxable 2 = 0
 E: Taxable by TAX41 = 1
 Non-taxable 1 = 0
 MRS = 10000

[JOB#232, 262]

Function key (#232)

Media key (#262) HALO PROGRAMMING



XXX : Function No.

A : Max digit figure (1~9)

B : Exponent (0~8)

JOB#	Function No.	Function	Remarks
232	1	Θ1	Item B is specifiable within the range from 0 to 7
	2	Θ2	
	3	Θ3	
	4	Θ4	
	24	TAX	Item B is specifiable within the range from 0 to 7
262	49	RA	Item B is specifiable within the range from 0 to 8
	50	PO	
	46	CA1	Item B is specifiable within the range from 0 to 8
	47	CA2	
	71	CHK	
	57	CH1	
	59	CH2	
	61	CH3	
	63	CH4	
	65	CH5	
	67	CH6	
	69	CH7	

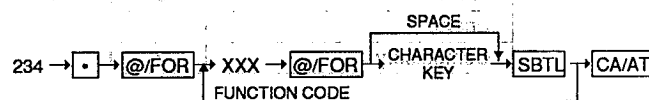
Entry range, system : (10 x A)^B

MRS = 17 for the functions Θ and tax and tip.

= 18 for other functions than Θ and tax and tip.

[JOB#234]

Text programming for misc keys



XXX : FUNCTION CODE

Characters can be entered by using character keys or numeric keys. The key entry sequence for entering one character by numeric keys is as follows:

XXX → 00 KEY

XXX: CHARACTER CODE (3DIGITS)

Max: 8 char

Function list

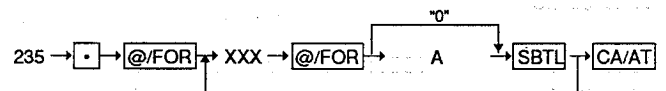
No.	Function	Default text
1	Θ1	Θ1
2	Θ2	Θ2
3	Θ3	Θ3
4	Θ4	Θ4
5	%1	%1
6	%2	%2
7	%3	%3
8	%4	%4
9	NET1	NET1
10	TAXABLE1 ST	TAX1 ST
11	GROSS TAX1	GRS TAX1
12	REFUND TAX1	RFD TAX1
13	NET TAX1	TAX1
14	TAXABLE2 ST	TAX2 ST
15	GROSS TAX2	GRS TAX2
16	REFUND TAX2	RFD TAX2
17	NET TAX2	TAX2
18	TAXABLE3 ST	TAX3 ST
19	GROSS TAX3	GRS TAX3
20	REFUND TAX3	RFD TAX3
21	NET TAX3	TAX3
22	GROSS M-TAX	GRS MTAX
23	REFUND M-TAX	RFD MTAX
24	NET M-TAX	M-TAX
28	TOTAL TAX	*TTL TAX
29	NET2	NET2
30	COUPON PLU	CP PLU
31	VOID	VOID
32	SBTL VOID	SBTL VD
33	MANAGER VOID	MGR VD
34	VOID MODE	VOID
35	REFUND	REFUND
36	HASH VOID	HASH VD
37	HASH REFUND	HASH RF
38	NO SALE	NOSALE
39	VP COUNTER	VPCNT
40	SLIP COUNTER	SLIP CNT
41	DRAWER COUNTER	DRW CNT
42	PBAL COUNTER	PBAL CNT
43	COVER COUNTER	COVER CNT

No.	Function	Default text
44	CUSTOMER	CUSTMER
45	NET3 (SALES)	NET3
46	CASH	CASH
47	CASH2	CASH2
49	RA	***RA
50	PO	***PO
51	CHECK CASHING	CA/CHK
52	CHECK CHANGE	CHK/CG
54	CONVERSION1	CONV 1
55	CONVERSION2	CONV 2
56	FS IN DRAWER	FS/ID
57	GROSS CHARGE1	CHARGE1
58	REFUND CHARGE1	CHARGE1-
59	GROSS CHARGE2	CHARGE2
60	REFUND CHARGE2	CHARGE2-
61	GROSS CHARGE3	CHARGE3
62	REFUND CHARGE3	CHARGE3-
63	GROSS CHARGE4	CHARGE4
64	REFUND CHARGE4	CHARGE4-
65	GROSS CHARGE5	CHARGE5
66	REFUND CHARGE5	CHARGE5-
67	GROSS CHARGE6	CHARGE6
68	REFUND CHARGE6	CHARGE6-
69	GROSS CHARGE7	CHARGE7
70	REFUND CHARGE7	CHARGE7-
71	CHECK	CHECK
72	CASH+CHECK IN DRAWER	CA+CK ID
73	CASH IN DRAWER	***CID
74	DEPOSIT	DEPOSIT
75	DEPOSIT REFUND	DPST RF
76	SERVICE	SERVICE
77	TIP PAID	TIP PAID
78	TIP IN	TIP IN
79	(+) DEPT TOTAL	*DEPT TL
80	(-) DEPT TOTAL	DEPT (-)
81	HASH (+) DEPT TOTAL	*HASH TL
82	HASH (-) DEPT TOTAL	HASH (-)
83	(+) BOTTLE RETURN TOTAL	*BTTL TL
84	(-) BOTTLE RETURN TOTAL	BTTL (-)
85		
86	PBAL	***PBAL
87	CBAL	***CBAL
88	SUBTOTAL	SUBTOTAL
89	MDS SBTL	MDSE ST
90	TOTAL	***TOTAL
91	CHANGE	CHANGE
92	DUE	DUE
93	TIP DUE	TIP DUE
94	TRAY TOTAL	TRAY TL
102	BALANCE	****BAL
103	ITEMS	ITEMS
104	COPY	COPY
105	Net taxable 4 st	TAX4 ST
106	Gross taxable 4 st	GRS TAX4
107	Refund taxable 4 st	RFD TAX4

No.	Function	Default text
108	Net tax 4 total	TAX4
109	GST EXEMPT	GST EXPT
110	PST TOTAL	PST TTL
111	GST TOTAL	GST TTL

[JOB#235]

Miscellaneous key programming 3 (item %/subtotal %)



XXX : Function No.

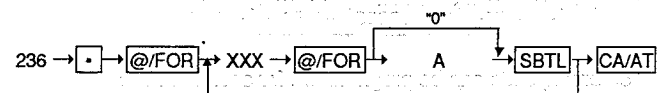
A : Item %/Subtotal % 1/0

MRS. 0

Function No.	Function	Remarks
5	%1	
6	%2	
7	%3	
8	%4	

[JOB#236]

Miscellaneous key programming 4 (Store/Vender)



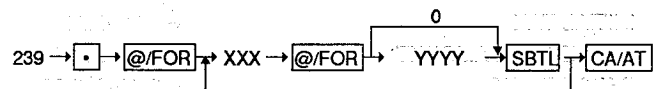
XXX : Function No.

A : Store/Vender 1/0

Function No.	Function	Remarks
1	01	
2	02	
3	03	
4	04	

[JOB#239]

Miscellaneous key programming 5 (% HALO)



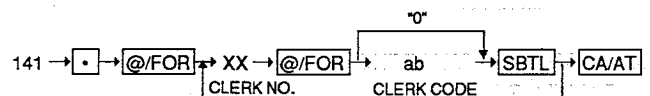
XXX : Function No.

YYYYY : %HALO

Function No.	Function	Remarks
5	%1	
6	%2	
7	%3	
8	%4	

[JOB#141]

CLERK CODE DEFINITION



XX: CLERK NO.

= 1~99

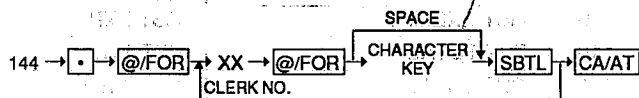
ab: CLERK CODE

= 1~99

MRS = No CLERK code is programmed.

[JOB#144]

CLERK NAME PROGRAMMING



Characters can be entered by using character keys or numeric keys.
The key entry sequence for entering one character by numeric keys is as follows:

PROGRAM SPACES IF NOT USED.

XXX → 00 key

XXX : Character code (3 digits)

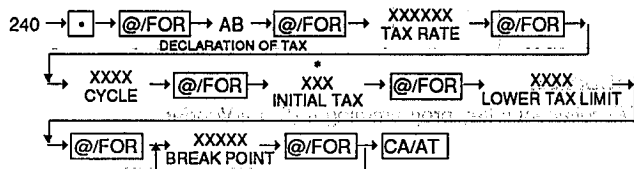
Max. 10 characters

MRS = Space

[JOB#240]

TAX TABLE PROGRAMMING

NOTE: If the tax table is programmed on when GST is VAT, the tax rate will be 0%.



50 breakpoints can be programmed for each tax table.

* Depression of the SBTL key at the following points means a tax table delete operation.

A: Interval between breakpoints is 1 dollar or more = 1
Interval between breakpoints is below 1 dollar = 0

B: TABLE 1 PROGRAMMING = 1

TABLE 2 PROGRAMMING = 2

TABLE 3 PROGRAMMING = 3

TABLE 4 PROGRAMMING = 4

TAX RATE = 0.0001~99.9999%

CYCLE = 0.01~99.99

INITIAL TAX = 0.01~9.99

LOWEST TAX AMOUNT = 0.01~99.99

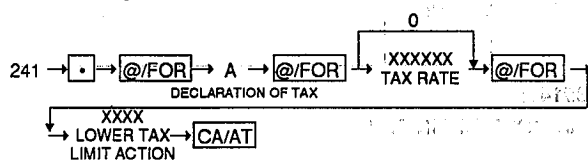
BREAK POINT = 0.01~999.99

MRS = NO TAX

[JOB#241]

% TAX RATE PROGRAMMING

NOTE: When GST is VAT, the lower tax limitation setting will be disregarded.



A: TABLE 1 PROGRAMMING = 1

TABLE 2 PROGRAMMING = 2

TABLE 3 PROGRAMMING = 3

TABLE 4 PROGRAMMING = 4

% TAX RATE = 0.0000~99.9999%

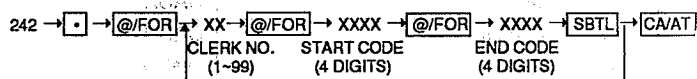
LOWEST TAX AMOUNT = max. 99.99

MRS = NO TAX

[JOB#242]

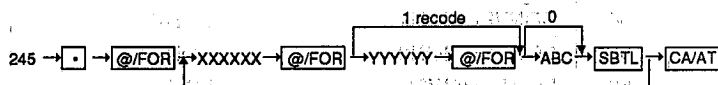
CLERK PROGRAMMING

Range of PBLU numbers that a CLERK can use



[JOB#245]

PLU CODE SET (range)



XXXXXX: Start PLU code (1~999999)

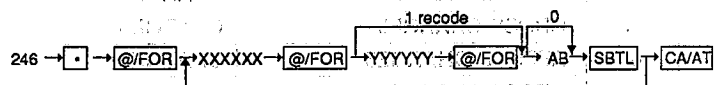
YYYYYY: End PLU code (1~999999)

A: Delete/PLU/Subdept/Inhibit = 3/2/1/0

BC: DEPT. code (1~99)

[JOB#246]

PLU FUNCTION PROGRAMMING (range)



XXXXXX: Start PLU code (1~999999)

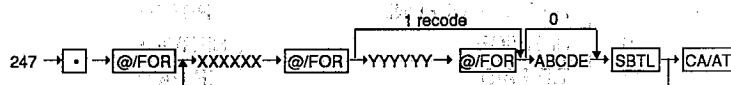
YYYYYY: End PLU code (1~999999)

A: Tare table number 1~9/Non 9~1/0

B: Scale compulsory/Enable/Inhibit 2/1/0

[JOB#247]

PLU TAX STATUS PROGRAMMING (range)



XXXXXX: Start PLU code (1~999999)

YYYYYY: End PLU code (1~999999)

A: Sign -/+ 1/0

B: Food stampable Yes/No 1/0

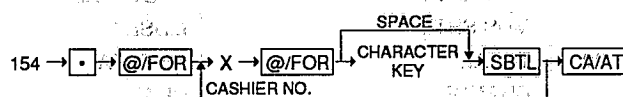
C: Taxable 3 Yes/No 1/0

D: Taxable 2 Yes/No 1/0

E: Taxable 1 Yes/No 1/0

[JOB#154]

CASHIER NAME PROGRAMMING



Characters can be entered by using character keys or numeric keys.
The key entry sequence for entering one character by numeric keys is as follows:

XXX → 00 KEY

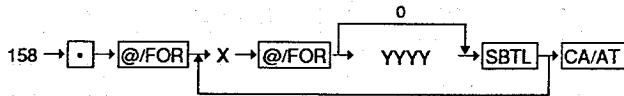
XXX : Character code (3 digits)

Max. 10 characters

MRS = Space

[JOB#158]

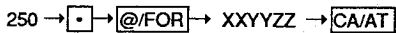
SCALE TABLE PROGRAMMING



X : Table No. (1~9)
 YYY: Weight (0~99.99)

[JOB#250]

DATA SETTING



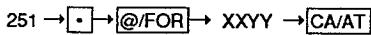
XYYZZ: Date (Year-Month-Day/Day-Month-Year/Month-Day-Year)

* The date entry format complies with the applicable SRV-mode programming.

MRS = 010100

[JOB#251]

TIME SETTING



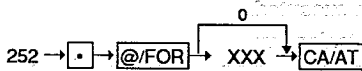
XX: Hour (00~23)

YY: Minute (00~59)

MRS = 0

[JOB#252]

MACHINE NUMBER SETTING

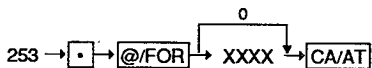


XXX : Machine number (0~999)

MRS = 0

[JOB#253]

CONSECUTIVE NUMBER SETTING

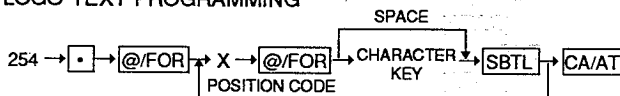


XXXX: Consecutive number (0000~9999)

MRS = 0

[JOB#254]

LOGO TEXT PROGRAMMING



X : 1~6	1
	2
	3
	4
	5
	6

1 Block max. 21 characters

Character can be entered by using character keys or numeric keys.
 The key entry sequence for entering one character by numeric keys is as follows:

XXX -> 00 Key XXX: Character code (3 digits)

MRS =

SHARP
 IS
 THE BEST
 YOUR
 RECEIPT
 THANK YOU

Note: This programming is related to JOB#912D programming.

Only when "6-line header instead of a stamp" is selected by JOB#912D programming, all 6 lines are programmable.

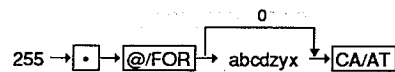
When "3-line header instead of a stamp" is selected, upper 3 lines (1st-3rd line) are programmable.

When "stamp and 3-line footer" is selected, lower 3 lines (4th-6th line) are programmable.

When "stamp only" is selected, no line is programmable.

[JOB#255]

Programming of the limits to initial slip feed line, No. of times of slip printing, tray subtotal feed line and No. of times of validation printing.



ab : Initial slip feed line = 0~64

cd : Slip print max line No. = 0~99

z : No. of times of slip printing = 0~9

y : No. of times of validation printing = 0~9

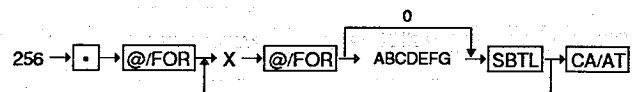
x : Feed line after depression of tray ST key = 0~9

It can be programmed in the SRV mode whether or not to validate the limits to slip initial feed, the No. of times of slip printing, and the number of times of validation printing.

MRS = 099110

[JOB#256]

OPTIONAL FEATURE



X : 1

MRS = 00000000

A : OP X/Z report Disable/Enable 1/0

B : PO operation in REG mode Disable/Enable 1/0

C : Refund type of sale function in REG mode Disable/Enable 1/0

D : "REND" key entry in REG mode Disable/Enable 1/0

E : Direct void function in REG mode Disable/Enable 1/0

F : Indirect void function in REG mode Disable/Enable 1/0

G : Subtotal void in REG mode Disable/Enable 1/0

H : Refund VP Compulsory/Noncompulsory 1/0

X : 2

MRS = 200000

B : PLU level shift system (Manual (MGR) / Manual (MGR®) /

Auto (MGR) / Auto (MGR®)) 3/2/1/0

C : Printing of the number of purchases Yes/No 1/0

D : Time print No/Yes 1/0

E : Journal select/Full print 1/0

F : Item VP Disable/Enable 1/0

G : Coupon VP Compulsory/Noncompulsory 1/0

X : 3 MRS = 0000000

A : Zero skip in server report No/Yes 1/0

B : Zero skip in cashier report No/Yes 1/0

C : Zero skip in transaction report No/Yes 1/0

D : Zero skip in DEPT. report No/Yes 1/0

E : Zero skip in PLU report No/Yes 1/0

F : Zero skip in hourly report No/Yes 1/0

G : Zero skip in daily net report No/Yes 1/0

X : 4

E : Tip entry method Fix-Rate entry/Amount entry 1/0

F : Tax-amount printing at SRVC-key entry Yes/No 1/0

G : Cover count & table# entry Compulsory/inhibit 1/0

[JOB#257] SENTINEL AMOUNT SETTING

0

257 → [] → @/FOR → XXXXXXXX → CA/AT

XXXXXXXX : Limitation on sentinel amount

0.00 ~ 9999999.99

MRS = 9999999.99

[JOB#259] CASHIER DRAWER ASSIGNMENT

259 → [] → @/FOR → x → @/FOR → a → SBTL → CA/AT

CASHIER NO.

x : Cashier No. = 1~4

a : Drawer No. = 1~4

Not open

MRS = 1

[JOB#260] MEDIA KEY PROGRAMMING

260 → [] → @/FOR → XXX → @/FOR → ABCDEFGHIJ → SBTL → CA/AT

DEPOSIT CHECK TO MESSAGE ON BACK OF CHECK WILL PRINT ONLY ON SLIP PRINTER.

XXX : Function No.

A : Slip print compulsory/noncompulsory 1/0

B : Footer print Yes/No 1/0

C : Non-add code or CA/AT entry compulsory/noncompulsory 1/0

D : Change due Disable/Enable 1/0

E : VP compulsory/noncompulsory 1/0

F : Taxable 4 delete Yes/No 1/0

G : Taxable 3 delete Yes/No 1/0

H : Taxable 2 delete Yes/No 1/0

I : Taxable 1 delete Yes/No 1/0

J : Drawer opening No/Yes 1/0

K : Entry of amount tendered compulsory/noncompulsory (Cash, check) 1/0

compulsory/noncompulsory (CH1~7) 1/0

MRS = 0

Function No.	Function	A	B	C	D	E	F	G	H	I	J
46	CA1	○	○	○	X	○	○	○	○	○	○
47	CA2	○	○	○	X	○	○	○	○	○	○
71	CHK	○	○	○	○	○	○	○	○	○	○
57	CH1	○	○	○	○	○	○	○	○	○	○
59	CH2	○	○	○	○	○	○	○	○	○	○
61	CH3	○	○	○	○	○	○	○	○	○	○
63	CH4	○	○	○	○	○	○	○	○	○	○
65	CH5	○	○	○	○	○	○	○	○	○	○
67	CH6	○	○	○	○	○	○	○	○	○	○
69	CH7	○	○	○	○	○	○	○	○	○	○

* Items marked with a circle (O) are programmable.

[JOB#261] MEDIA KEY FUNCTION PROGRAM (Amount HALO)

261 → [] → @/FOR → XXX → @/FOR → YYYYYYY → SBTL → CA/AT

XXX : Function No.

YYYYYYY : Limit (Amount)

Function No.	Function	Entry range, system	Remarks
52	CHK CHANGE	0 to 999999.99	0 - 1 MIN
51	CA/CHK	0 to 999999.99	

[JOB#265] HOURLY REPORT (Starting time)

265 → [] → @/FOR → abb → CA/AT

a : Memory format : 15 minutes (12hours)/30minutes (24hours)=1/0

bb : Starting time (hour) : 00 ~ 23

ex)
Case 1.

265 → [] → @/FOR → 107 → CA/AT

X1 Hourly report (#160) [15min, start time = 7]

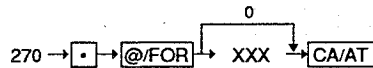
#160	
7:00	(DATA)
7:15	(DATA)
7:30	(DATA)
7:45	(DATA)
SUBTOTAL	(DATA)
18:45	(DATA)
SUBTOTAL	(DATA)
****	(DATA)

12 hours started from 7:00

← Data out of range (19:00 ~ 6:59)

[JOB#270]

PROGRAMMING OF THE TIME INTERVAL FOR THE TILL TIMER

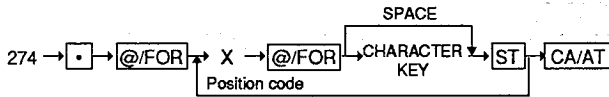


XXX : 0 ~ 255 sec

MRS = 000

[JOB#274]

CHECK VALIDATION MESSAGE PROGRAMMING



X : 1 ~3

1
2
3

1 block max. 21 characters

Characters can be entered by using character keys or numeric keys.
The key entry sequence for entering one character by numeric keys is as follows:

XXX → 00 key XXX : Character code (3 digits)

MRS = 'space'

'space'

For deposit only

[JOB#280, 281, 282]

SECRET CODE PROGRAMMING



#280 : PGM1 mode

#281 : Z1 mode

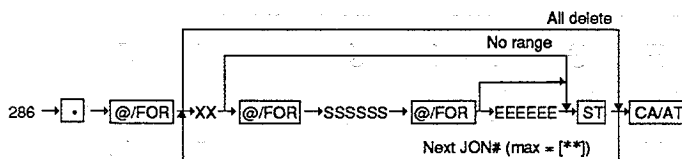
#282 : Z2 mode

* If "0" is entered, "compulsory secret code entry" is canceled.

MRS = 0

[JOB#286]

STACK REPORT



XX: JOB#

SSSSSS: Start code

EEEEEE: End code

[**]

Max 42 steps are programmable.

"1-step" means the memory size used for one no-range type JOB#.

The range type JOB# needs "8 steps"

For example)

The memory size for programming JOB#00, 20 and 50 is 10 steps.

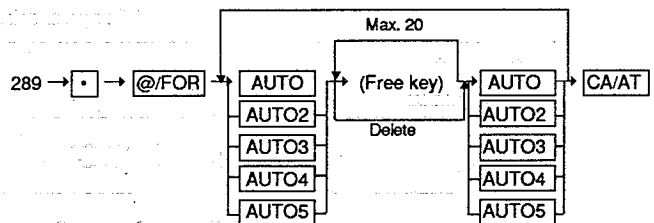
(i.e 1 step for JOB#00, 8 steps for JOB#20, and 1 step for JOB#50).

JOB#	Report name	Type
0 0	General	RANGE
1 0	DEPT.	
1 3	DEPT. All group	
2 0	PLU	
3 0	Transaction	
3 1	CID	
4 0	All server	
5 0	All cashier	
6 0	Hourly	
7 0	Daily net	
0 5	System general	
0 9	System general (GT reset)	
1 5	System DEPT.	
1 8	System all group	
2 5	System PLU	
3 5	System transaction	RANGE
3 6	System CID	
4 5	System all server	
5 5	System all cashier	
6 5	System hourly	
7 5	System daily net	
8 0	PBLU	
8 5	System PBLU	
1 4	Gross margin	
2 4	PLU stock	
1 9	System Gross margin	
2 9	SYstem PLU stock	

<< CAUTION >>

[JOB#289] (This JOB must be performed at Z1/X2/Z2 mode position.)

AUTO KEY SETTING



(Auto key function)

- This machine has [AUTO] key which can be programmed the key-sequence data.
- When [AUTO] key is depressed, the machine works as same as the programmed key-sequence is entered.

<Example>

Mode switch

↓

(Z1/X2/Z2)

289 → [] → [@/FOR] → [AUTO] → [PLU1] → 100 → [DEPT2] → [AUTO] → [CA/AT]

(REG)

Key entry	R/J	Display	Comment
[AUTO]			
	PLU000001 \$1.10	PLU000001 1.10	Same as [PLU1] entry
		1	Same as 1 entry
		10	Same as 0 entry
		100	Same as 0 entry
	DEPT2 \$1.00	DEPT2 1.00	Same as [DEPT2] entry

(Z1/X2/Z2)

289 → [] → [@/FOR] → [AUTO2] → 100 → [CA/AT] → [AUTO2] → [CA/AT]

(REG)

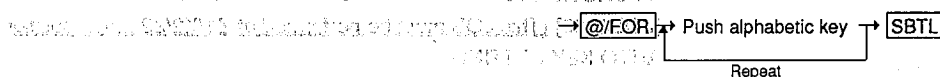
Key entry	R/J	Display	Comment
[DEPT1]			
	DEPT.01 \$1.00	DEPT.01 1.00	
[AUTO2]			
		1	Same as 1 entry
		10	Same as 0 entry
		100	Same as 0 entry
	TOTAL \$1.00	CHANGE 0.00	Same as [CA/AT] entry
	CASH \$1.00		
	CHANGE \$0.00		

7-2 Character assignment method

The ER-3250 has two kinds of method at character assignment.

One is to use alphabetic assigned key and other one is to use ten keys.

~ Using alphabetic assignment method ~



Programming key layout (ER-3250)

↑	↑																
RECEIPT	JOURNAL			#	(DC)										0	1	
"	.	,		\$	%	&		A	B	C	D	E			2	3	
/	:	;		@/FOR	•	CL		F	G	H	I	J			4	5	
<	=	>		7	8	9		K	L	M	N	O			6	7	
+	@	^		4	5	6		P	Q	R	S	T			8	9	
-	'	,		1	2	3		U	V	W	X	Y			SBTL		
{		}		0	00			Z	(	)	-	(Space)			CA/AT		

Fig. 7-1

- The symbols the area is not printed and not used character keys.
- (DC) : double size character code

[JOB#290, 291]

TRAINING MODE START (#290), END (#291)

290/291 → [] → [@/FOR] → [CA/AT]

<Training mode>

- All operation is same as REG-mode operation.
- In the training mode, the consecutive number is printed as same number on receipt /journal printer and slip printer.
- In the training mode, the consecutive number is not counted up.

[JOB#295]

PBLU (the range programming of available PBLU code)

295 → [] → [@/FOR] → XXXX → [@/FOR] → YYYYY → [CA/AT]

1 PBLU

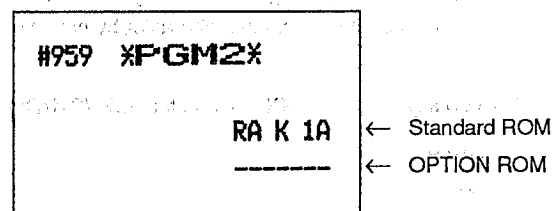
XXXX : Start PBLU code

YYYY : End PBLU code

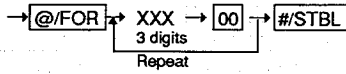
[JOB#959]

ROM version print

959 → [@/FOR] → [CA/AT]



~ Using ten key ~



Note: **00** key is used to enter each 3 digit alpha code.

CODE TABLE FOR ALPHA DESCRIPTOR PROGRAMMING

Code	Character	Code	Character	Code	Character	Code	Character
032		060	<	088	X	116	t
033	!	061	=	089	Y	117	u
034	"	062	>	090	Z	118	v
035	#	063	?	091	Ä	119	w
036	\$	064	@	092	Ö	120	x
037	%	065	A	093	Ü	121	y
038	&	066	B	094	^	122	z
039	'	067	C	095	_	123	{
040	(	068	D	096	`	124	
041	)	069	E	097	a	125	}
042	*	070	F	098	b	126	ß
043	+	071	G	099	c	127	¢
044	,	072	H	100	d	128	!!
045	-	073	I	101	e	129	1
046	.	074	J	102	f	130	2
047	/	075	K	103	g	131	3
048	0	076	L	104	h	132	4
049	1	077	M	105	i	133	1/2
050	2	078	N	106	j	134	F _T
051	3	079	O	107	k	135	←
052	4	080	P	108	l	136	→
053	5	081	Q	109	m	137	S
054	6	082	R	110	n	138	SS
055	7	083	S	111	o	139	◀
056	8	084	T	112	p	140	▶
057	9	085	U	113	q	141	F
058	:	086	V	114	r	142	T
059	;	087	W	115	s	143	DC

DC : DUBLE CODE

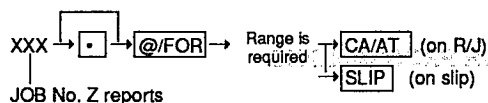
Fig. 7-2

8. OP X/Z, X1, Z1/X2/Z2 MODE

The following categories of reports can be printed by the ECR.

- 1) OP X/Z mode reports (cashier/server report)
- 2) X1 mode (daily sales reports)
- 3) Z1/X2/Z2 mode (daily and periodic sales reports)

To print reports, use the following key entry sequences.



The report will be printed on journal and receipt papers with this procedure.

By depressing [SLIP] key instead of [CA/AT] key in the above key sequence, the reports can be printed on slip papers and journal paper.

The DATA part will be described in the "LIST OF REPORTS".

NOTE — GENERAL RULE —

If [•] key is depressed following a JOB code number entry with these procedures, data inside the ECR will be cleared (i.e. Z reports).

(Some JOB code numbers do not allow key to follow.)

If [•] key is not depressed following a JOB code number, data inside of ECR will be maintained (i.e. X reports).

The key is allowed only after a secret code entry when the mode switch position has been changed (i.e. when the mode switch is turned and an effective entry is made, the effective of secret code entry disappears.)

Note with a circle "O" in the following table shows the function available on the standard machine and marked with a triangle "Δ" shows the function that can be used with an option in use.

Report name	Mode *1						*3 JOB#	Data for reading	Note
	OP X/Z		X1	Z1/X2/Z2					
	X	Z	X1	Z1	X2	Z2			
GENERAL			O	O	O	O	00	—	
DPT ALL			O		O		10	—	
IND GROUP			O				12	GROUP NO. (1~15)	
GROUP TOTAL			O				13	—	
GROSS MARGIN			O				14	DEPT RANGE *2 (1~99)	
PLU BY RANGE			O	O			20	PLU CODE RANGE (1~999999) *2	
PLU BY SUBSIDIARY DEPT			O				21	DEPARTMENT CODE (1~99)	
PLU STOCK			O				24	PLU CODE RANGE (1~999999) *2	
TRANSACTION			O		O		30	—	
CID			O				31	—	All cashier CID
ALL CLERK			O	O	O	O	40	—	
IND CLERK	O	O	O	O			41	CLERK CODE	The CLERK code must be entered
ALL CASHIER			O	O	O	O	50	—	
IND CASHIER	O	O	O	O			51	—	The cashier must be entered
HOURLY			O	O			60	—	
			O				60	RANGE *2	
DAILY NET					O	O	70	—	31 day
PBLU			O	O			80	PBLU CODE RANGE *2	
PBLU BY CLERK	O		O	O			81	CLERK CODE	
STACKED REPORT			O	O	O	O	90	—	

NOTE (*1): X1: Daily reading report

X2: Periodical reading report

Z1: Daily resetting report

Z2: Periodical resetting report

NOTE (*2): Range can be specify by entering the beginning and ending numbers. To specify only one item, enter only the number.

[XXXX] → [•/FOR] → [XXXX]

Beginning number

Ending number

NOTE (*3): To issue a periodical summary report, enter "2" on the hundreds position of the job code.

(EX): Job code of the daily general report is 100, and the job code 200 for the general periodical summary report.

- The report will be printed on a receipt and journal tape with depression of the [CA/AT] key.
It will be printed on a slip and journal tape with depression of the [SLIP] key.
- If the decimal point key is pushed following to the job code, the data within the ECR will be cleared (resetting report).
The decimal point key may not be pushed for the report that cannot issue a reset report.
- If the decimal point key is not pushed following to the job code, the data within the ECR will be retained (reading report).

9. SERVICE PRECAUTION

9-1. Hints and tips when installing the RAM chip option (ER-02RA)

- 1) When the RAM option (ER02RA) is to be installed to the option memory PWB (ER-01MB), care must be exerted not to damage the PWB.

9-2. Hints and tips to remove the top cabinet

- 1) The ground strap at front right of the printer must be removed right after the printer cover was removed.

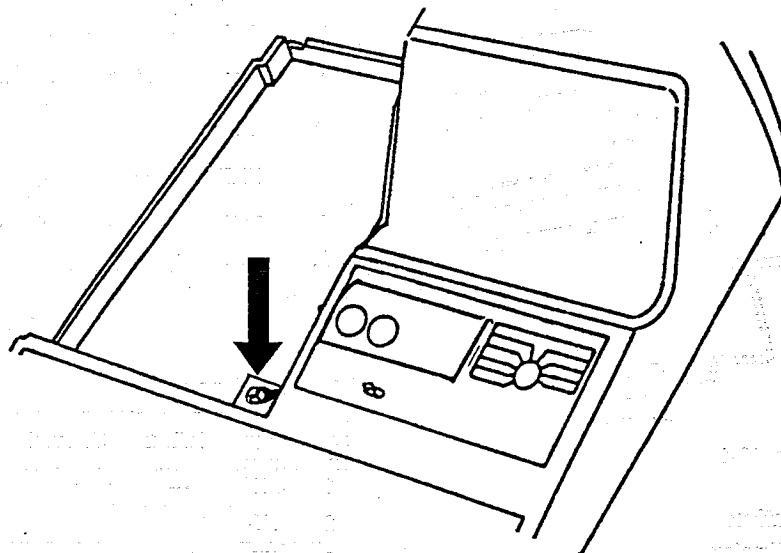


Fig. 9-1

9-3. Printer motor lock

In the ER-3250, the motor will automatically turn off when a premature halting of the timing signals occurs due to a paper misfeed, ribbon jam, intrusion of alien object, etc. When the motor stops, an intermittent beeping will occur, with no indication in the display.

<How to reset the motor lock>

- 1) Disconnect the AC cord from the wall outlet. And remove the cause.
- 2) When power is restored, the following is displayed.

MOTOR LOCK

Fig. 9-2

- 3) Depress the [CL] key to return the ER-3250 to the point where the cause happened. The power failure symbols will be printed after a line feed.
- 4) Print sample

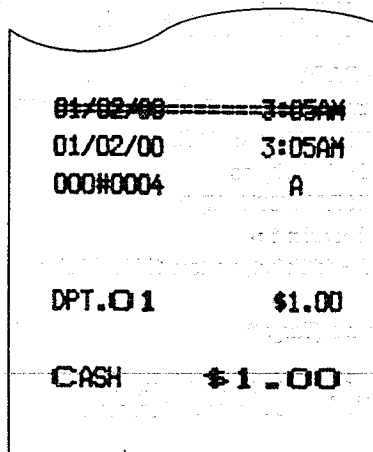


Fig. 9-3

9-4. Others

- 1) It may destruct the diode D10 if the VRAM is shorted with 5V supply during machine servicing. In this event, normal operation is usually possible, except that it may met recharge the battery, failing to back it up, resulting in memory frustration.

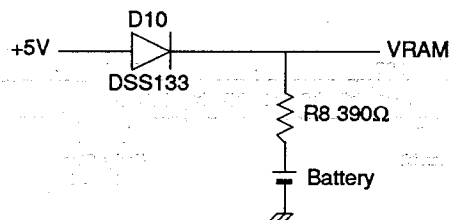


Fig. 9-4

- 2) On the maine PWB (Ver.=F7179RC), PRC (HD643308F, IC18) is not connected to the pin-12 circuit pattern. The pin-12 (GND) is solder bound (shorted) with the pin-11 (GND). Note the above description when replacing the PRC. Correction is made to the main PWB (Ver.=F7179RCV1-12), circuit ptnern.

10. DOWN LOAD FUNCTION

10-1. General

As one of ER-3250 functions, it is possible to transfer RAM data between the ER-3250s, which can be utilized to save RAM data at a time of machine servicing.

The cable (QCNW-6952RCZZ) must be used to connect two ER-3250's.

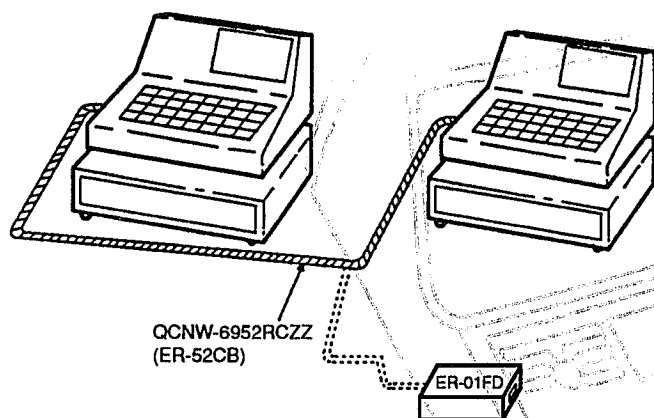


Fig. 10-1

10-2. SIO interface specification

- 1) Operation mode: Simplex
- 2) Line configuration: Direct connect
- 3) Data rate: 9600, 4800, 2400, 1200, 300BPS
(Selected by SRV JOB#903-A)
- 4) Sync mode: Asynchronous
- 5) Checking: Vertical parity (odd)
- 6) Code: 7 bits (ASCII); BCD
- 7) Bit sequence: LSB first
- 8) Line level: TTL level
- 9) Data format: Fig. 11-2

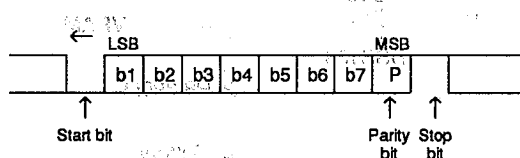


Fig. 10-2

10-3. Location of connector pins

QCNW-6952RCZZ (ER-52CB)

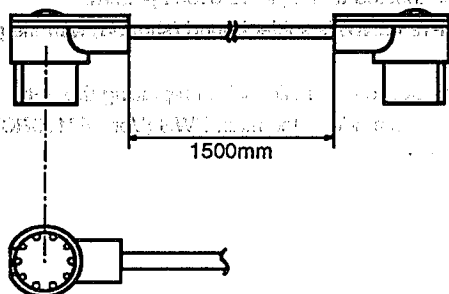


Fig. 10-3

No.	Signal	Signal	No.
①	GND	GND	①
2	NC	NC	2
③	ER	ER	③
4	NU	NU	4
5	NU	NU	5
6	NU	NU	6
⑦	DR	DR	⑦
⑧	RXD	RXD	⑧
⑨	TXD	TXD	⑨
10	NU	NU	10

Fig. 10-4

Interfacing signals

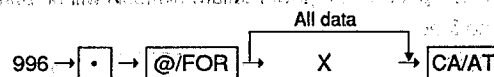
Pin No.	Signal name	In/Out	On level	Description
1	GND	—	—	Signal ground
2	NC	—	—	Not connected
3	ER	Out	Low	Equipment ready (power on)
4	—	—	—	—
5	—	—	—	—
6	—	—	—	—
7	DR	In	Low	Data set ready
8	RXD	In	High: MARK Low: SPACE	Receive data
9	TXD	Out	High: MARK Low: SPACE	Transmit data
10	—	—	—	—

This cable is identical to the one used for the ER-5200. But, it has to be noted that different signals are used.

10-4. Application specification

The following service (SRV) modes are available for the serial data transfer of the ER-3250.

1) Data transmit (Source side)



X = 0: SSP DATA

1: Common RAM and Bank RAM (02H~87H)

< 256k RAM > < 1M RAM x 4 >

Total = 554k bytes

2: BANK RAM (88H~A7H)

< 1M RAM x 1 >

Total = 128k bytes : lost 1M RAM chip

2) Data receive (Target)



10-5. Transmission protocol

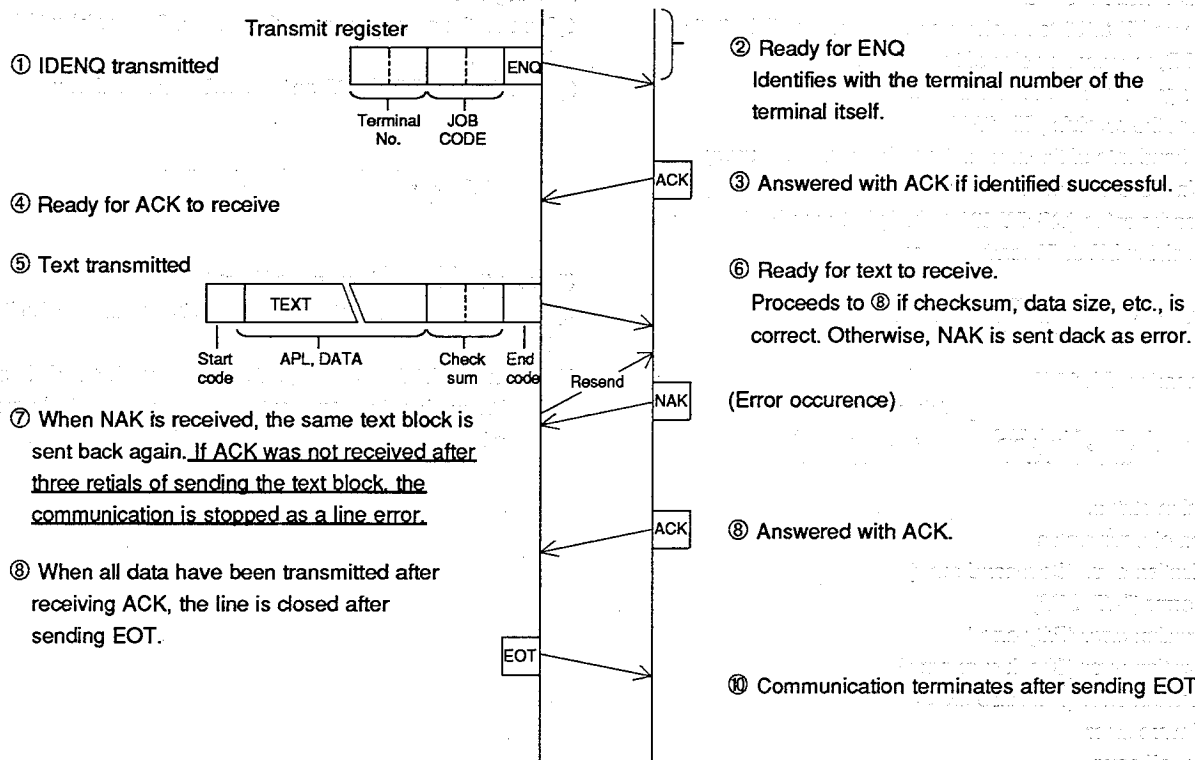
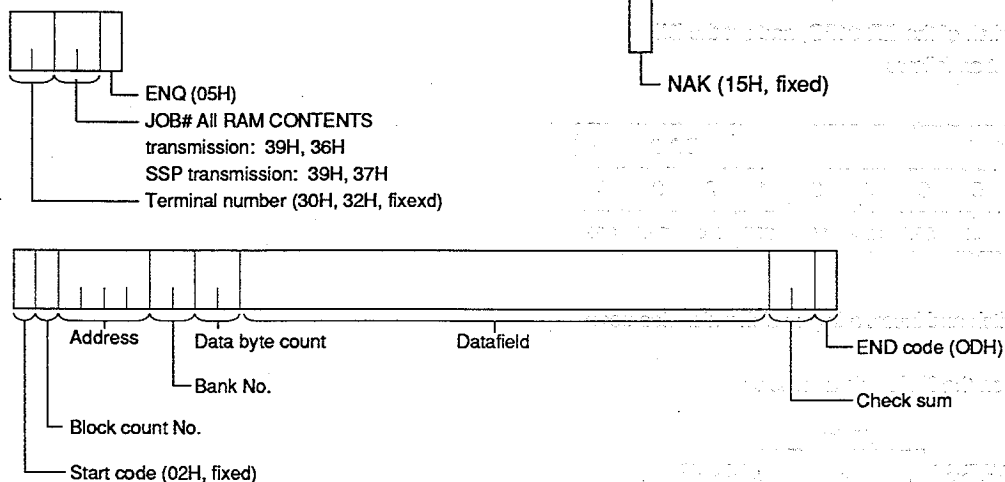


Fig. 10-5

10-6. Data format

One byte of the RAM data to be transmitted is divided into high order four bits and low order four bits and converted into ASCII code or BCD.

Then, they are transmitted in the following format as memory image. Status is transmitted as a block.



- Start code: STX 02H, fixed
- Block count No.: Ring count method
(30H → 31H → 32H 39H)
- Address: Represents the memory top addwss of the data to be transmitted in the ASCII code.

- Data byte count: Indicates the number of effective data within data field.
- Data field: Memory contents are converted into ASCII code and sent. Fixed to 128 bytes.
- Check sum
- End code: CR (0DH, fixed)

10-7. Operational method

- 1) To prepare an ER-3250 to receive data from another ER-3250 or the ER-01FD, the memory size of the receiving unit must be the same as or greater than the sending unit.
- 2) Master reset the receiving ER-3250.
- 3) Match the baud rate of the transmitter with the receiver using JOB#902 in the SRV mode.
- 4) Connect loader cable (QCNW-6952RCZZ) between ER-3250S.
- 5) Set the receiving ER-3250 ready to receive.



- 6) Start the sending ER-3250.



- 7) Transmission status.

Description of error status

- 1: Application error (Command error)
- 2: Line error (DTR OFF)
- 3: Application error (Prity error)
- 4: Application error (Check sum error)
- 5: Application error (Data size error)
- 6: Hard ware error
- 7: Power off error
- 10: Time out error
- 11: Application error (Transmit data size error)
- 12: Application error (Block sequence error)
- 13: Memory full error

10-8. Error print

When an error is met during transmission or reception, the transmission terminates with the following printed.

10-9. Saving/Loading of data to/From the FD unit

Configuration

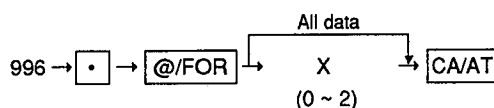
- 1) Turn off the power switch of the ER-01FD, and set the DIP switches of the FD unit as follows:

ER-01FD

DS-1								DS-2			
1	2	3	4	5	6	7	8	1	2	3	4
OFF	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF

Saving data

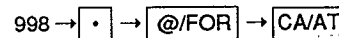
- 1) Turn on the powerswitch and insert a floppy disk which has been formatted.
- 2) Start the SEND JOB on the ECR side as follows:



- 3) Data transmission is started and the green lamp on the ER-01FD blinks.

Loading data

- 1) Turn on the power switch and insert the floppy disk which stores the data.
- 2) Start the RECEIVE JOB on the ECR side as follows:



- 3) Press the [SEND] key on the FDunit.
- 4) Data transmission is started and the Green lamp on the ER-01FD blinks.

NOTE: In the ER-01FD mode, only one file can be made in one disk.

When, therefore, transmitting DEPT preset, PLU preset, and other preset of one ECR, three disks are required.

③ Test termination

Change the MODE switch position other than SRV position to terminate the test. The test termination message is printed.

Test termination print 101

[3] M-2640 printer test-1

① Key operation

102 → [CA/AT]

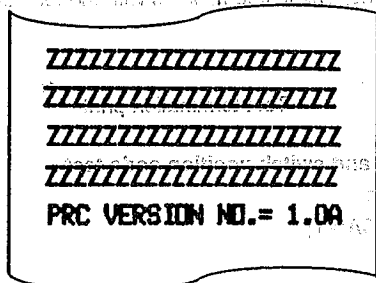
② Functional description

A letter "Z" is printed on all 21 columns of four lines on both the receipt and the journal disregarding the position of the receipt ON/OFF switch and the printer controller version number is printed, then the receipt is issued. Error print will be produced if the reset signal was issued to both the receipt and journal sides in continuation.

③ Check the following items:

- Check printout of the controller version number.
- Check to see that the print lines start at the same column.
- Check to see that printing is done within the margins for both the receipt and the journal, specifically the right side of the receipt and the left side of the journal.
- Check printing of the stamp.
- Lines on both lines must be printed.

< Print sample >



④ Test termination

The test automatically terminates without termination message print. No error print will be produced if an error was met.

[4] M240 printer test-1

① Key operation

As slip must be set on the print table.

103 → [CA/AT]

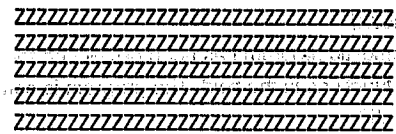
② Functional description

Regardless of paper setting, 35 digits of "Z" are printed on five lines, then the printer stops after releasing the paper.

③ Check the following items:

- Print starting position must line up in the same column.
- Check the print quality.
- Make sure that the paper is released at the termination.

< Print sample >



④ Test termination

The test terminates automatically. If the paper release lever is not up, perform JOB#107 BTF, IFV test to release the paper.

The following error message will be displayed when the ER-33SP printer or the slip printer interface board is not connected (IFV error). Ensure the connection. Depression of any key or a change in the MODE switch position causes the test to terminate with the following error message printed.

Error display

Dot-display : SLIP PRINTER ERR

Error print :

R/J printer: E- - - - 103

[5] Keyboard test

① Key operation

104 → [CA/AT]

② Functional description

Key actions of the standard version ER-3250 are tested. Press keys on the keyboard in the order given in the figure below. If the test has been successful, the test terminates with the printout showing correct action of every key. If an error has occurred in a course of the test, the error message will be printed immediately upon occurrence of the error. When the test is interrupted, the normal test termination printout is not produced.

③ Check the termination print

④ Test termination

When the [CA/AT] key is depressed, the test terminates with the termination printout.

104 E-XXX 104

Test termination print

Error print

XXX: Key code that caused the error

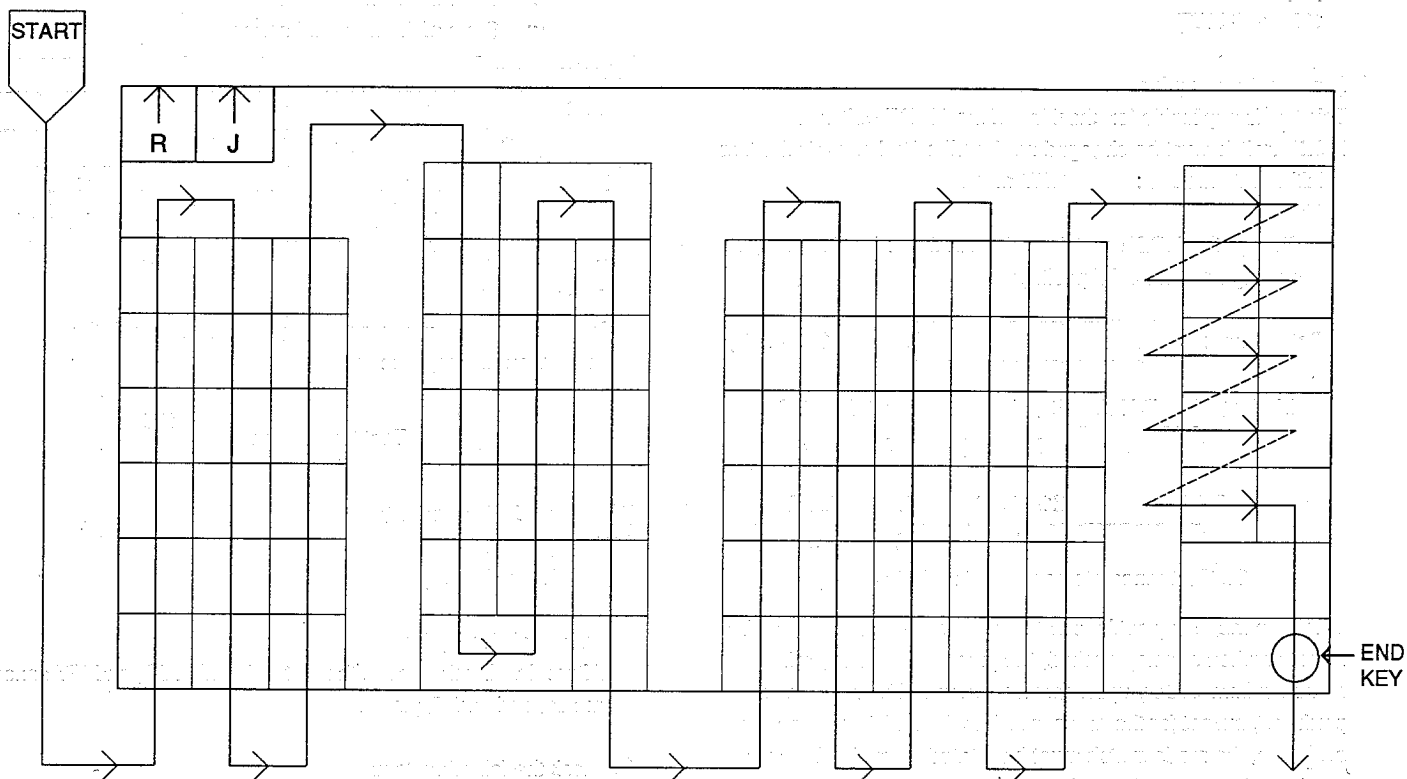


Fig. 11-1

↑ RF	↑ JF	22	30	38	46	54	62	70	78	86	94	102	110	118	126
7	14	21	29	37	45	53	61	69	77	85	93	101	109	117	125
6	13	20	28	36	44	52	60	68	76	84	92	100	108	116	124
5	12	19	27	35	43	51	59	67	75	83	91	99	107	115	123
4	11	18	26	34	42	50	58	66	74	82	90	98	106	114	122
3	10	17	25	33	41	49	57	65	73	81	89	97	105	113	121
2	9	16	24	32	40	48	56	64	72	80	88	96	104	112	120
1	8	15	23	31	39	47	55	63	71	79	87	95	103	111	119

Fig. 11-2

[6] Mode switch test

① Key operation

105 → [CA/AT]

② Functional description

This test is applicable for checking of the MODE switch. The MODE switch must be changed as described below to do the test.

Initial state mode : SRV mode

Mode check

Change the MODE switch position in the order given below starting from the SRV position.

Dot-display : M X X: 0 ~ 7, E, F

Mode:	SRV	PGM2	PGM1	OFF	OP	X/Z	REG
X :	0	1	2	(E)	3	4	
	SRV		Z1/X2/Z2		X1	MGR	
	0		7		6	5	

(X: E-intermediate position, F-multiple errors)

When the mode key settings in the sequence other than specified is met or when any key pushed, the program execution will terminate immediately upon occurrence, with the error printout produced, except for the mode switch in the middle position. To avoid this, the mode switch must be rotated correctly. Because nothing is interrogated until the mode key returns to the SRV position once after the switch has turned to the "Z1/X2/Z2" positions, it needs not to be rotated slowly.

③ Check the following items:

Check to see if the following are displayed and that the termination print is produced

④ Test termination

When the test has been completed according to the given procedure, the test automatically terminates with the termination message printed. To terminate the test in the middle of an operation, merely depress any key. then, the test will terminate with the termination message printed. When an error was encountered, the test automatically terminates with the error message printed on the printer.

105
E - - -
105

Test termination print Error print(any key depression)

[7] Validation sensor and near end sensor test

The validation sensor and the near end sensor are optional units.

① Key operation

106 → [CA/AT]

② Functional description

State of the validation and near end sensor is sensed and displayed.

③ Check the following items:

On and off actions of the validation and near end sensors are tested and their results are displayed.

Dot-display:

VDS x NES y

x: State of the validation sensor

y: State of the near end sensor

Display	x/y	Description
VDS	O	Validation card not detected
	C	Validation card detected ★
NES	O	Journal side paper roll near end detected.
	C	Journal side paper roll near end not detected. ★

★ : "C" is always displayed when no sensor is used.

④ Test termination

Any key depression causes the test to terminate with the termination message on printout.

Test termination print
106

[8] BTF and IFV sensor test

① Key operation

107 → [CA/AT]

② Functional description

After releasing the paper, the state of BOF, TOF, and IFV sensor are sensed and displayed.

③ Check the following items:

BOF, TOF: Check the paper set condition.

IFV: Check the connection of the ER-33SP slip printer and slip printer interface.

Check the on and off actions.

Dot-display:

IFV x BTF yz

X: State of IFV

Y: State of the BOF sensor

Z: State of the TOF sensor

Display	x/y	Description
IFV	O	Slip printer or slip printer interface not in connection
	C	Slip printer or slip printer interface not in connection
BOF	O	Slip paper not detected
	C	Slip paper detected.
TOF	O	Slip paper not detected
	C	Slip paper detected

④ Test termination

Any key depression terminates the test with the termination print.

Test termination print
107

NOTE-1: The slip printer and the slip printer interface board must be connected for this test. Otherwise, it will result in display : SLIP PRINTER ERR

NOTE-2: When fastening and unfastening the IFV connector, the MODE switch must be position to other than SRV and the power off. (unplug ECR)

[9] Calendar oscillator test

① Key operation

108 → [CA/AT]

② Functional description

This program is used to test the calendar oscillator function.

Popup-Display: XX -- XX: Present time
└─ Blinks every 500ms.

③ Check the following items:

- i) Testing blinking "--". (500ms ON and OFF)

④ Test termination

Any key depression terminates the test with the termination print.

Test termination print 108

[10] SSP test

① Key operation

109 → [CA/AT]

② Functional description

If an SSP is programmed, its contents are automatically checked and the result is printed.

③ Check the following items:

Check printing of the termination message.

④ Test termination

- The test terminates automatically after printing the termination print.

109 || E --- 109 || F --- 109

Normal end print Error print SSP table full print (NOTE-3)

NOTE-3: The test data will not be erased after completion of the test. The test completes without a check after making a full printout of the SSP table. The SSP test area should remain in the SSP table.

[11] Drawer open sensor test

The drawer open sensor is optional units.

① Key operation

110~113 → [CA/AT]

② Functional description

The drawer indicated by the job number is opened to check the proper action.

Drawer opened : O indicated

Drawer closed : C indicated

★ : "C" is always displayed when no sensor is used.

110: Drawer-1 : Standard drawer

111: Drawer-2 : Option drawer

112: Drawer-3 : Option drawer

113: Drawer-4 : Option drawer

③ Check the following items: The following are tested.

- i) Check opening of the specified drawer.
- ii) Check the display indication when the drawer is open and close.

④ Any key depression terminates the test with the termination print.

Test termination print 11X X: 0~3

[12] M-2640 printer test-2

① Key operation

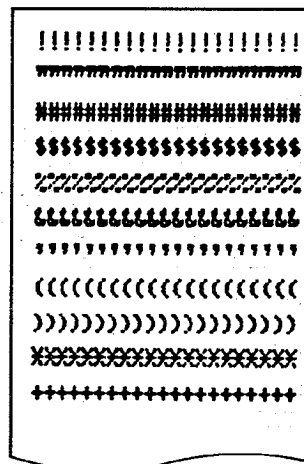
114 → [CA/AT] (Receipt switch in the ON position)

② Functional description

All character within the character generator are printed. The same one character is printed on a single line. If any key has been depressed before completion of printing one line, the test terminates. If not, the print test continues with the relevant code indicated on the display unit. The state of the receipt switch is interrogated after completing all characters in the character generator. If the switch is on, the test continues. If it is off, the test terminates.

③ Check the following items:

- i) Check to see that every line started to print in the same column.
 - ii) Check to see that nothing is printed out of the print zone on both receipt and journal.
 - iii) Check the print quality.
- <Print sample>



④ Test termination

Depress any key or set the receipt switch to the off position to terminate the test. The test terminates.

[13] M-240 printer test-2

① Key operation (Receipt switch at ON position)

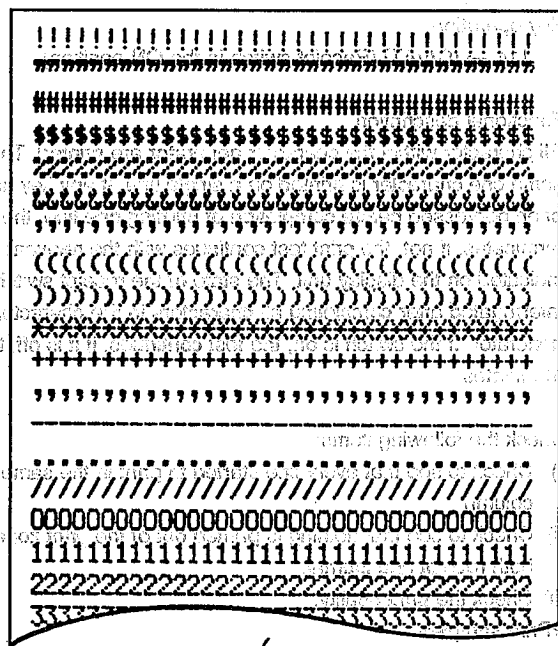
115 → [CA/AT]

② Functional description

Without paper sensing, all characters within the character generator are printed. The same one character is printed on a single line. If any key has been depressed before completion of printing one line, the test terminates. If not, the print test continues with the relevant code indicated on the display unit. The state of the receipt switch is interrogated after completing all characters in the character generator. If the switch is on, the test continues. If it is off, the test terminates.

③ Check the following items:

- i) Check to see that every line started to print in the same column.
 - ii) Check the print quality.
- <Print sample>



④ Test termination

Depress any key or set the receipt switch to the off position to terminate the test. The test terminates.

NOTE : Since the existence of paper is not checked, the test will be carried out without paper. But, the test must be started after loading the paper as it is not preferable for the printer.

[14] Display test-2

① Key operation

116 → [CA/AT]

② Functional description

The dot display and 7-segment display units are tested, repeating test items 1 through 7.

Test-1) Main display unit, same one character displayed over the all display columns (all characters).

Test-2) Main display unit, shifts a figure "8" from the first column to the 16th column.

Test-3) Main display unit, shifts the indicator from the first column to the 16th column.

Test-4) Main display unit, shifts the decimal point from the first column to the 16th column.

Test-5) Pop-up display unit, same one character displayed over the all display columns (0 to 9; and -).

Test-6) Pop-up display unit, shifts a figure "8" from the first column to the 7th column.

Test-7) Pop-up display unit, shifts the indicator from the first column to the 7th column.

Test-8) Pop-up display unit, shifts the decimal point from the first column to the 7th column.

When any key is pressed, the display test stops, and depression of any key resumes the test.

③ Check the following items:

- i) Check for correct display.
- ii) Check for blur, partial omission, and uneven activation.

④ Test termination

Change in the MODE switch to other than the SRV position stops the test and the termination message is printed.

Test termination print

116

[15] Serial interface test-1

① Key operation

117 → [CA/AT]

② Functional description

The following two kinds of loopback tests are carried out using the special service tool (UKOG-6651RCZZ) to check the trans and receive data, ready, and not-ready signals.

Test-1 : Checks ER ↔ DR

Test-2 : Checks TXD ↔ RXD

Dot-display:

SIO CHECK

③ Check the following items:

Successful test results must be checked on the display and the termination message print.

④ Test termination

Termination print

X = 1: Test-1 error (ER ↔ DR error)

2: Send and receive data unmatch error (TXD ↔ RXD error)

3: Timer overflow error (TXD ↔ RXD error)

4: Hardware error

5: P-OFF

[16] SIO test-2

① Key operation

118 → [CA/AT]

② Functional description

After the test-1, the test data is looped back as TXD and RXD to test the function. Any key depression or an error occurrence will terminate the test. However, no data verification will be carried out with this test.

Dot-display:

SIO LOOP CHECK

The test termination message must be confirmed.

[18] Standard RAM test

① Key operation

120 → [CA/AT]

② The following tests are carried out to the common RAM area and the bank RAM area of the standard RAM.

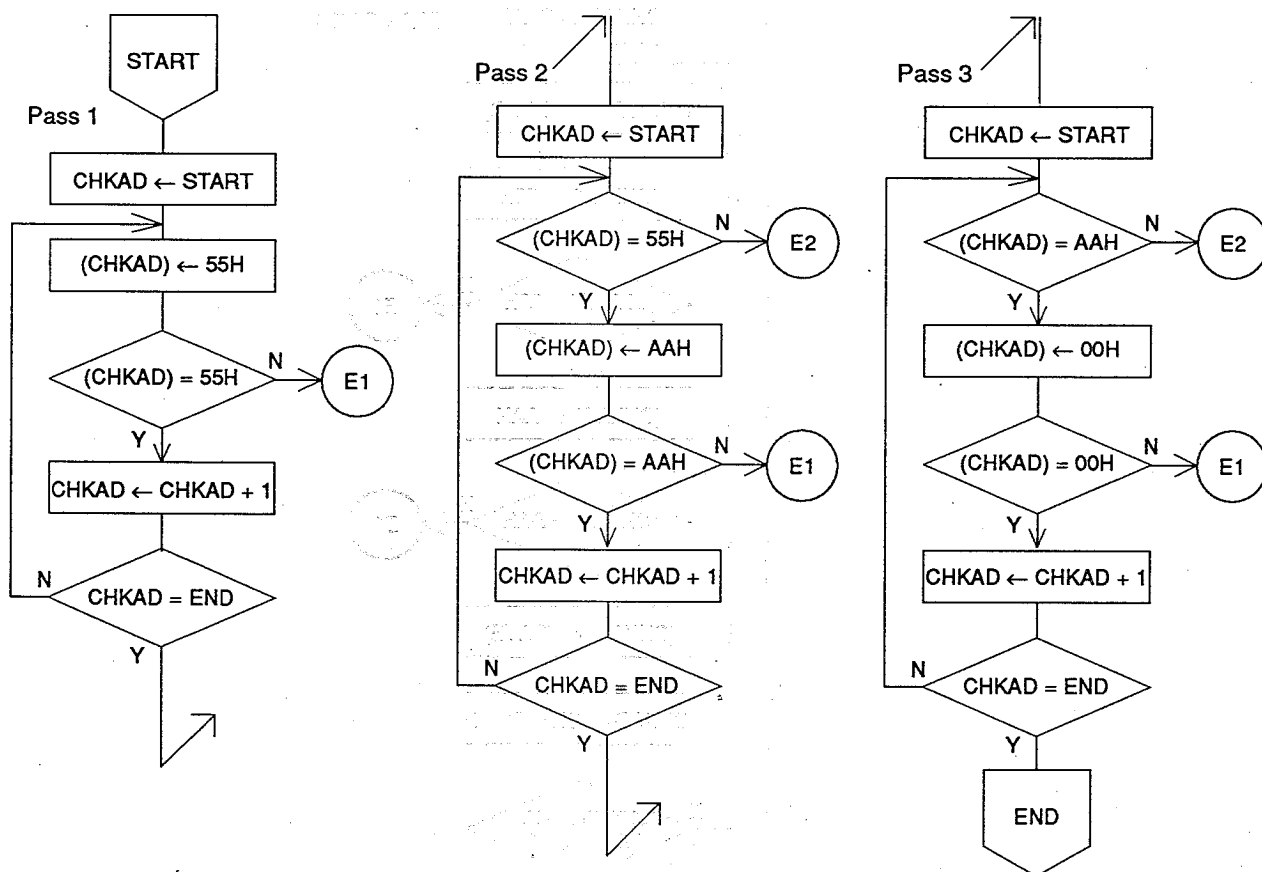
1. Common area test

Read/write test of pass 1 through 3 is done to the general working area (256 bytes) within the common RAM.

Pass 1: Test data "55H" is written to the test address (NOTE-1) and verified, then the test address is incremented. This continues until all the test addresses are finished.

Pass 2: After checking existence of the test data "55H" in the first test address (NOTE-2), the next test data "AAH" is written in that address and verified (NOTE-1), then the test address is incremented. This continues until all the test addresses are finished.

Pass 3: After checking existence of the test data "AAH" in the first test address (NOTE-2), a null data "00H" is written in that address and verified (NOTE-1), then the test address is incremented. This continues until all the test addresses are finished.



2. Bank area test

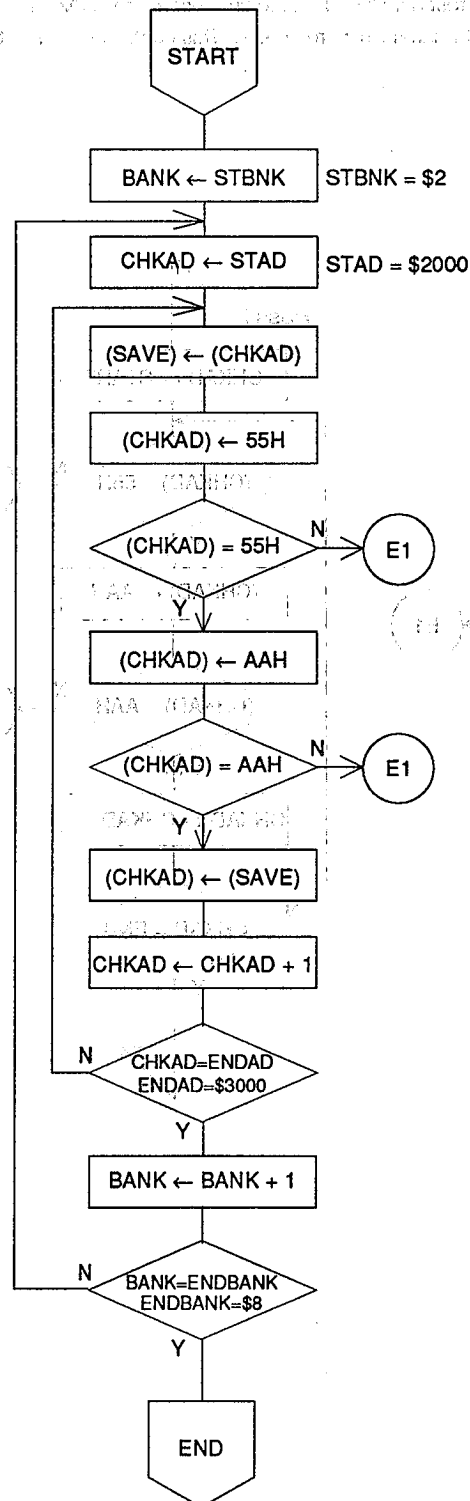
This test consists of the single byte read/write test, test point read/write test, and bank select test.

1) Single byte read/write test (device test)

The following test is conducted to banks 2, 3, 4, 5, 6, and 7 (address 2000 thru 2FFF).

- i) Save data.
- ii) "55H" is written and verified to see if properly written.
- iii) "AAH" is written and verified to see if properly written.
- iv) Restore data.

The above operations i) thru iv) are done in terms of a byte.



2) Test point read/write test

The following test is conducted to the test address of the bank 2.

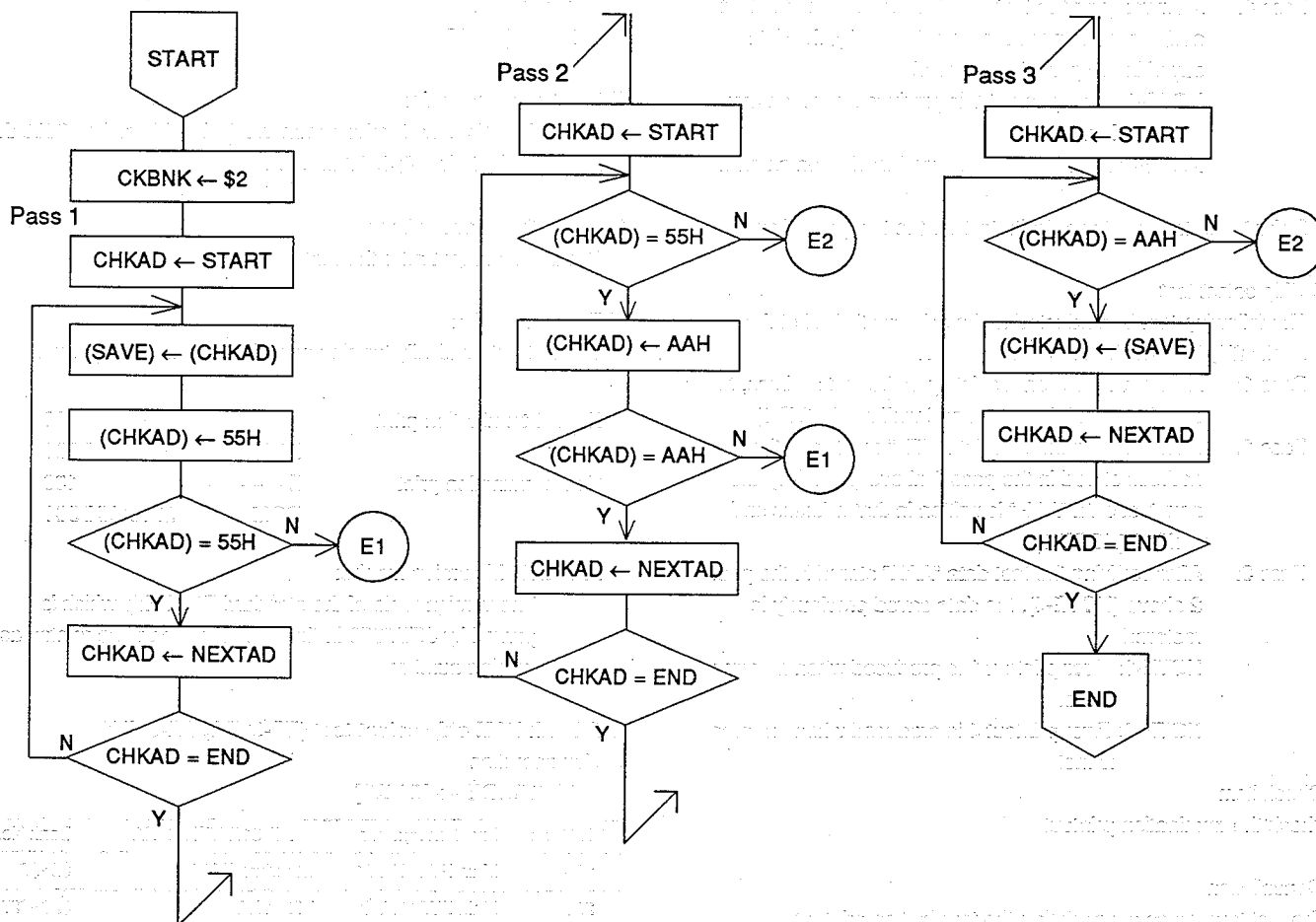
Pass 1: After saving the data existing in the test address, the test data "55H" is written and verified (NOTE-1).

Pass 2: After verifying existence of the test data "55H" written in the pass 1 above (NOTE-2), the next test data "AAH" is written and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" written in the pass 2 above (NOTE-2), the data previously saved is then restored to its address.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-2: Error printout 2 is produced when an error is met.



Check address)

Address	Address bus											
	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1	A0
2000	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	1
2002	0	0	0	0	0	0	0	0	0	0	1	0
2004	0	0	0	0	0	0	0	0	0	1	0	0
2008	0	0	0	0	0	0	0	0	1	0	0	0
2010	0	0	0	0	0	0	0	1	0	0	0	0
2020	0	0	0	0	0	0	1	0	0	0	0	0
2040	0	0	0	0	0	1	0	0	0	0	0	0
2080	0	0	0	0	1	0	0	0	0	0	0	0
2100	0	0	0	1	0	0	0	0	0	0	0	0
2200	0	0	1	0	0	0	0	0	0	0	0	0
2400	0	1	0	0	0	0	0	0	0	0	0	0
2800	1	0	0	0	0	0	0	0	0	0	0	0

3) Bank select test

The following test is conducted to the bank select test address (2000H) for the banks 2, 3, 4, 5, and 6.

Pass 1: After saving the data existing in the test address, the test data "55H" is written in that address and verified (NOTE-1).

Pass 2: After verifying the test data "55H" stored in the test address in the pass 1 above (NOTE-3), the next test data "AAH" is written (NOTE-1).

Pass 3: After verifying the test data "AAH" stored in the test address in the pass 2 above (NOTE-3), the data saved in the pass 1 is restored.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-3: Error printout 3 is produced when an error is met.

Refer to the test point read/write test for the test procedure.

4) Chip select test

The following test is conducted to the address 2000H of the banks 2H, 20H, 40H, 60H, 80H, and A0H.

Pass 1: After saving the data existing in the test address, the test data "55H" is written and verified (NOTE-1).

Pass 2: After verifying the test data "55H" existing in the address stored in the pass 1 above (NOTE-4), the next test data "AAH" is written in that address and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" stored in the pass 2 above (NOTE-4), the data saved previously is restored.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-4: Error printout 4 is produced when an error is met.

③ Check item

Check the termination printout.

④ Cancellation

The test terminates after printing the termination printout.

Termination printout:

Normal termination	-----	120
Abnormal termination	E-----	120

Error kind printout:

Error 1 printout	E1-----	Y
Error 2 printout	E2-----	Y
Error 3 printout	E3-----	Y
Error 4 printout	E4-----	Y

Y: 0 : Standard RAM (Common area)

1 : Standard RAM (Bank 2 ~ 7)

2~: Optional RAM (See JOB#200.)

NOTES:

- When an error occurred, the test will resume after producing the error descriptive printout. No error printout will be produced for the RAM area to which an error was found before, even if an error occurred again in course of the test.

- If the memory option was not installed, the error-1 printout will be produced for the vacant RAM area during the chip select test.
- However, in the case of the area other than specified by a JOB#code, it does not affect the termination printout. If no error occurred within the standard RAM area, a normal printout will be produced.

[19] Common ROM test

① Key operation

130 → [CA/AT]

② Functional description

A sumcheck is done for the common ROM (address hex 8000 thru FFFF, banks 2 thru 7; 4000 thru 7FFF).

③ Check the following items:

Check the printout after the test.

④ Test termination

The test automatically terminates with termination message.

Normal termination print	130
ROM1	27101XXXXX
Error termination print	130
E-----	130
ROM1	27101XXXXX

XXXX: ROM version number

The version table of the standard ROM chip which is printed by JOB#959 in the PGM2 mode will be printed as a version number.

[20] Bank RAM chip select test (ER-01RA, ER-02RA)

① Key operation

JOB#CODE → [CA/AT]

JOB#code	Location number	ER-01RA/ER-02RA	Bank No.
200	Main PWB RAM1	Standard RAM	\$2~\$7
201	Main PWB RAM2	ER-01RA	\$20~\$27
202	Main PWB RAM2	ER-02RA	\$20~\$3F
203	ER-01MB RAM1	ER-01MB standard RAM	\$40~\$5F
204	ER-01MB RAM2	ER-02RA	\$60~\$7F
205	ER-01MB RAM3	ER-02RA	\$80~\$9F
206	ER-01MB RAM4	ER-02RA	\$A0~\$BF

② Description

Test is carried out to the memory area that corresponds to a RAM option.

This test consists of the single byte read/write test, test point read/write test, and bank select test.

1) Single byte read/write test (device test)

For operational procedure of a test, refer to "Job#120 standard RAM test".

The following test is conducted to all banks subject to the test (address 2000 thru 2FFF).

i) Save data.

ii) "55H" is written and verified to see if properly written (NOTE-1).

iii) "AAH" is written and verified to see if properly written (NOTE-1).

iv) Restore data.

The above operations i) thru iv) are done in terms of a byte.

2) Test point read/write test

The following test is conducted to the test address of the top bank of the RAM subject to the test.

Pass 1: After saving the data existing in the test address, the test data "55H" is written and verified (NOTE-1).

Pass 2: After verifying existence of the test data "55H" written in the pass 1 above (NOTE-2), the next test data "AAH" is written and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" written in the pass 2 above (NOTE-2), the data previously saved is then restored to its address.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-2: Error printout 2 is produced when an error is met.

Check address)

Address	Address bus											
	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1	A0
2000	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	1
2002	0	0	0	0	0	0	0	0	0	0	1	0
2004	0	0	0	0	0	0	0	0	0	1	0	0
2008	0	0	0	0	0	0	0	0	1	0	0	0
2010	0	0	0	0	0	0	0	1	0	0	0	0
2020	0	0	0	0	0	0	1	0	0	0	0	0
2040	0	0	0	0	0	1	0	0	0	0	0	0
2080	0	0	0	0	1	0	0	0	0	0	0	0
2100	0	0	0	1	0	0	0	0	0	0	0	0
2200	0	0	1	0	0	0	0	0	0	0	0	0
2400	0	1	0	0	0	0	0	0	0	0	0	0
2800	1	0	0	0	0	0	0	0	0	0	0	0

3) Bank select test

The following test is conducted to the bank select test address (2000H) for all banks subjected to the test.

Pass 1: After saving the data existing in the test address, the test data "55H" is written in that address and verified (NOTE-1).

Pass 2: After verifying the test data "55H" stored in the test address in the pass 1 above (NOTE-3), the next test data "AAH" is written in that address and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" stored in the test address in the pass 2 above (NOTE-3), the data saved in the pass 1 is restored.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-3: Error printout 3 is produced when an error is met.

4) Chip select test

The following test is conducted to the address 2000H of the banks 2H, 20H, 40H, 60H, 80H, and A0H.

Pass 1: After saving the data existing in the test address, the test data "55H" is written and verified (NOTE-1).

Pass 2: After verifying the test data "55H" existing in the address stored in the pass 1 above (NOTE-4), the next test data "AAH" is written in that address and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" stored in the pass 2 above (NOTE-4), the data saved previously is restored.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-4: Error printout 4 is produced when an error is met.

③ Check item

Check the termination printout.

④ Cancellation

The test terminates after printing the termination printout.

Termination printout:

Normal termination	20X
Abnormal termination	E ---

X: 0~6 (JOB#code)

Error kind printout:

Error 1 printout	E1 ----	Y
Error 2 printout	E2 ----	Y
Error 3 printout	E3 ----	Y
Error 4 printout	E4 ----	Y

Y: RAM area number (See table below.)

NOTES:

- When an error occurred, the test will resume after producing the error descriptive printout. No error printout will be produced for the RAM area to which an error was found before, even if an error occurred again in course of the test.
- If the memory option was not installed, the error-1 printout will be produced for the vacant RAM area during the chip select test.
However, in the case of the area other than specified by a JOB#code, it does not affect the termination printout.
- If the ER-02RA is tested with the ER-01RA installed, the error printout 3 will be produced for the areas that relate to the ER-02RA.

(Main PWB RAM 2)

RAM area No.	RAM bank	Location number	ER-01RA/02RA
1	\$2~\$7	Main RAM1	Standard RAM
2	\$20~\$27	Main RAM2	ER-01RA
3	\$28~\$3F	Main RAM2	ER-02RA
4	\$40~\$5F	ER-01MB RAM1	ER-01MB standard RAM
5	\$60~\$7F	ER-01MB RAM2	ER-02RA
6	\$80~\$9F	ER-01MB RAM3	ER-02RA
7	\$A0~\$BF	ER-01MB RAM4	ER-02RA

[21] Bank RAM unit test (ER-01MB, ER-01RA, ER-02RA)

① Key operation

JOB#code → [CA/AT]

JOB#code	Bank No.	Main PWB		ER-01MB			
		RAM1	RAM2	RAM1	RAM2	RAM3	RAM4
300	\$2~\$7	Standard RAM	—	—	—	—	—
301	\$2~\$7,\$20~\$27	Standard RAM	01RA	—	—	—	—
302	\$2~\$7,\$20~\$3F	Standard RAM	02RA	—	—	—	—
303	\$2~\$7,\$20~\$5F	Standard RAM	02RA	Standard RAM	—	—	—
304	\$2~\$7,\$20~\$7F	Standard RAM	02RA	Standard RAM	02RA	—	—
305	\$2~\$7,\$20~\$9F	Standard RAM	02RA	Standard RAM	02RA	02RA	—
306	\$2~\$7,\$20~\$BF	Standard RAM	02RA	Standard RAM	02RA	02RA	02RA

② Description

Test is carried out to the memory area that specified by Job#code.

This test consists of the single byte read/write test, test point read/write test, and bank select test.

For the operational procedure, refer to "Job#code 120 standard RAM test".

1) Single byte read/write test (device test)

The following test is conducted to all banks subject to the test (address 2000 thru 2FFF).

i) Save data

ii) "55H" is written and verified to see if properly written (NOTE-1).

iii) "AAH" is written and verified to see if properly written (NOTE-1).

iv) Restore data.

The above operations i) thru iv) are done in terms of a byte.

2) Test point read/write test

The following test is conducted to the test address of all banks that specified by the Job#code.

Pass 1: After saving the data existing in the test address, the test data "55H" is written and verified (NOTE-1).

Pass 2: After verifying existence of the test data "55H" written in the pass 1 above (NOTE-2), the next test data "AAH" is written and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" written in the pass 2 above (NOTE-2), the data previously saved is then restored to its address.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-2: Error printout 2 is produced when an error is met.

Check address)

Address	Address bus											
	11	10	9	8	7	6	5	4	3	2	1	0
2000	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	1
2002	0	0	0	0	0	0	0	0	0	0	1	0
2004	0	0	0	0	0	0	0	0	0	1	0	0
2008	0	0	0	0	0	0	0	0	1	0	0	0
2010	0	0	0	0	0	0	0	1	0	0	0	0
2020	0	0	0	0	0	0	1	0	0	0	0	0
2040	0	0	0	0	0	1	0	0	0	0	0	0
2080	0	0	0	0	1	0	0	0	0	0	0	0
2100	0	0	0	1	0	0	0	0	0	0	0	0
2200	0	0	1	0	0	0	0	0	0	0	0	0
2400	0	1	0	0	0	0	0	0	0	0	0	0
2800	1	0	0	0	0	0	0	0	0	0	0	0

3) Bank select test

The following test is conducted to the bank select test address (2000H) of all banks specified by the job#code.

Pass 1: After saving the data existing in the test address, the test data "55H" is written in that address and verified.

Pass 2: After verifying the test data "55H" stored in the test address in the pass 1 above (NOTE-3), the next test data "AAH" is written in that address and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" stored in the test address in the pass 2 above, the data saved in the pass 1 is restored.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-3: Error printout 3 is produced when an error is met.

4) Chip select test

The following test is conducted to the address 2000H of the banks 2H, 20H, 40H, 60H, 80H, and A0H.

Pass 1: After saving the data existing in the test address, the test data "55H" is written and verified (NOTE-1).

Pass 2: After verifying the test data "55H" existing in the address stored in the pass 1 above (NOTE-4), the next test data "AAH" is written in that address and verified (NOTE-1).

Pass 3: After verifying the test data "AAH" stored in the pass 2 above (NOTE-4), the data saved previously is restored.

NOTE-1: Error printout 1 is produced when an error is met.

NOTE-4: Error printout 4 is produced when an error is met.

③ Check item

Check the termination printout.

④ Cancellation

The test terminates after printing the termination printout.

Normal termination	30X
Abnormal termination	E----- 30X

X: 0~6 (Job#code)

Error kind printout:

Error 1 printout	E1-----	Y
Error 2 printout	E2-----	Y
Error 3 printout	E3-----	Y
Error 4 printout	E4-----	Y

Y: RAM area number (See table below.)

NOTES:

- When an error occurred, the test will resume after producing the error descriptive printout. No error printout will be produced for the RAM area to which an error was found before, even if an error occurred again in course of the test.
- If the memory option was not installed, the error-1 printout will be produced for the vacant RAM area during the chip select test.
However, in the case of the area other than specified by a JOB#code, it does not affect the termination printout.
- If the ER-02RA is tested with the ER-01RA installed, the error printout 3 will be produced for the areas that relate to the ER-02RA.

RAM area No.	RAM bank	Location No.	ER-01RA/02RA
1	\$2~\$7	Main RAM1	Standard RAM
2	\$20~\$27	Main RAM2	ER-01RA
3	\$28~\$3F	Main RAM2	ER-02RA
4	\$40~\$5F	ER-01MB RAM1	ER-01MB standard RAM
5	\$60~\$7F	ER-01MB RAM2	ER-02RA
6	\$80~\$9F	ER-01MB RAM3	ER-02RA
7	\$A0~\$BF	ER-01MB RAM4	ER-02RA

[22] Option ROM test (ROM banks 18H~1BH, ROM address 4000H~7FFFH)

① Key operation

400 → [CA/AT]

② Description

Sum check is carried out to the ROM option.

③ Check item

Check the termination printout.

④ Cancellation

The test terminates after printing the termination printout.

Termination printout:

Normal termination print

Error termination print

```

      400
ROM2  27512XXXXX
E----- 400
ROM2  27512XXXXX
    
```

XXXX: ROM version number

The version table of the ROM chip option to be printed by the JOB#959 in the PGM2 mode is printed as the version number.

"XXXXX" is printed when the ROM option is not installed.

12. CIRCUIT DESCRIPTION

12-1. Circuit block diagram

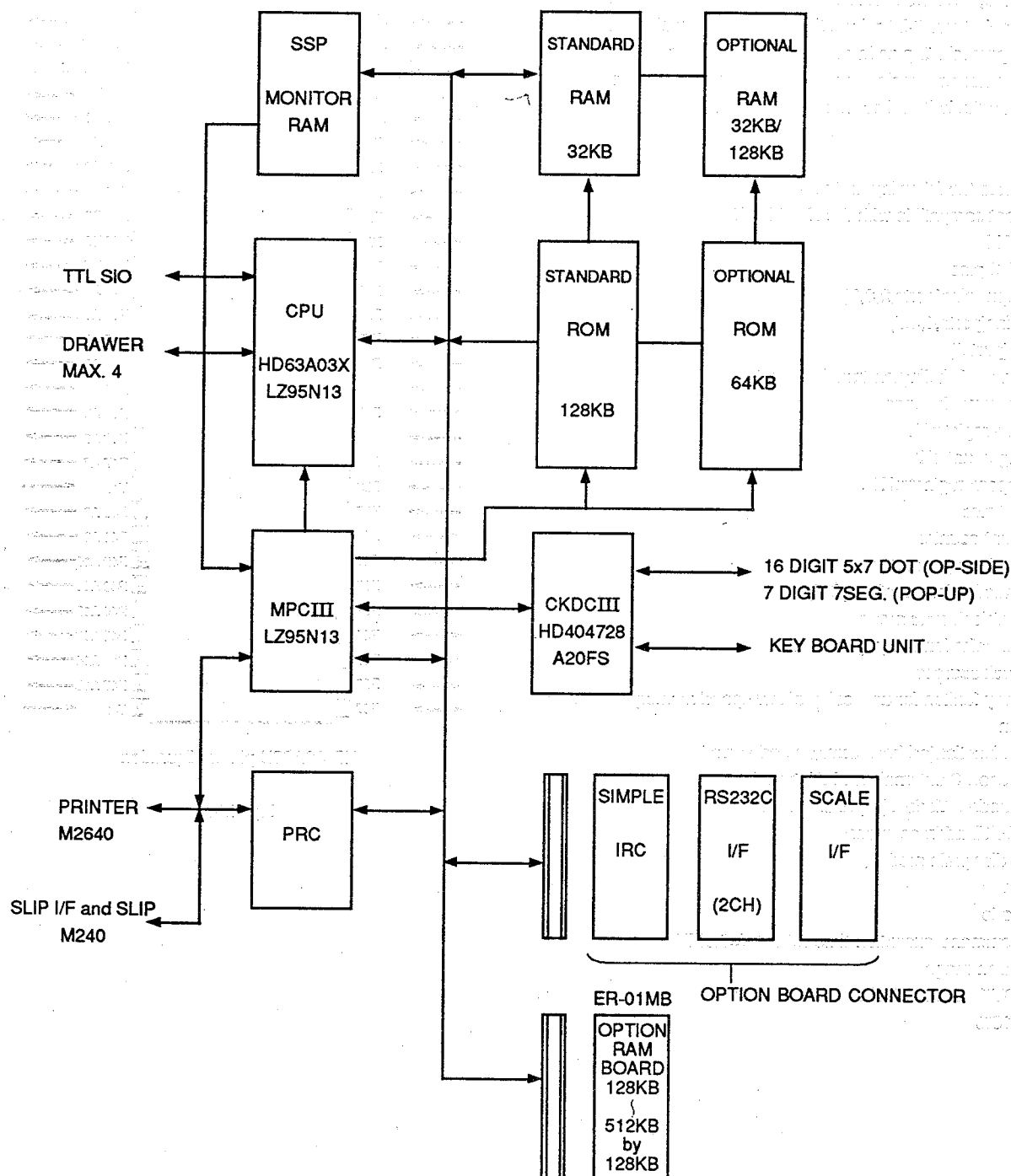


Fig. 12-1

12-2. Description of main LSI's

12-2-1. CPU (HD63A03X) description

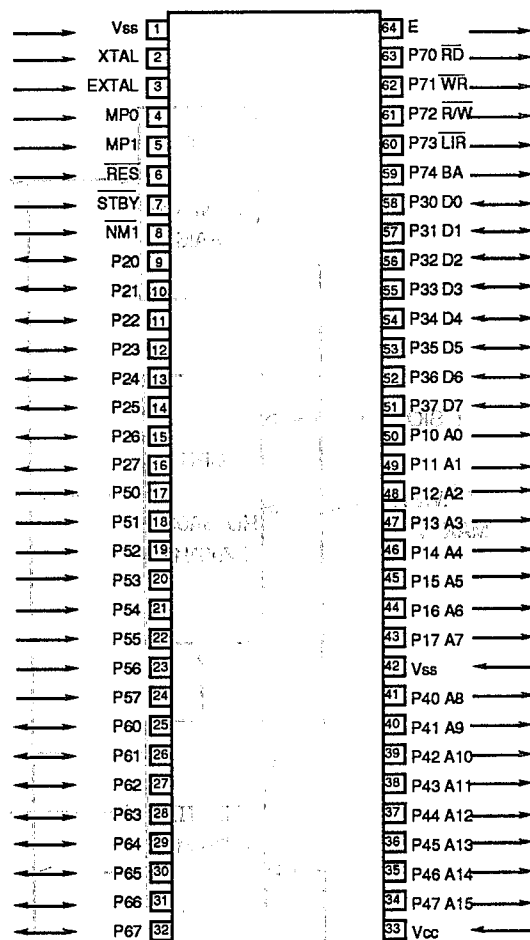
The HD63A03X is a high performance 8-bit CMOS microprocessor (MCU) which incorporates enhanced internal function and has the command codes compatible with the HD6301V1. Apart from the CPU, the HD63A03X incorporates the 192-bite RAM, 16-bit programmable timer, 8-bit reload timer, serial communication interface, and 53 parallel I/O pins. In addition, external bus release and low speed memory accessing are permitted when the system is expanded as it has the halt and memory ready functions.

1) Features

The HD63A03X has the following features:

- Command set compatible with the HD6301V1.
- 192-byte RAM
- 53 parallel I/O pins
- 24 input/output pins(ports,2,3,6)
- 21 output pins(ports,1,4,7)
- 8 input pins(port 8)
- Permits driving of darlington transistor(ports,2,6)
- 16-bit programmable timer
 - Input capture registerX1
 - Free running counterX1
 - Output compare registerX1
- 8-bit reload timer
 - External event counter
 - Square waveform generator
- Serial communication interface(SCI)
 - Async mode/clock sync mode
 - 3 kinds of transfer formats(async mode)
 - 6 kind of clock sources
- Memory ready funiton for accessing of low speed memory
- Halt function
- Error detect function(address error,op code error)
- Interrput cause...3 externals and 7 internals.
- Operation mode...Mode 1(expansion mode)
- Maximum 65KB address space
- Low power dissipatin mode
 - Sleep mode
 - Standby mode
- Minimum command execution time...0.5 μ s(f=2.0MHz)
- Wide operation range
 - VCC=3 to 6V(f=0.1 to 0.5MHz)
 - VCC=5V $\pm$ 10%

2) Pin configuration



HD 63A03X pin configuration

Fig. 12-2

3) Block diagram (HD63A03X)

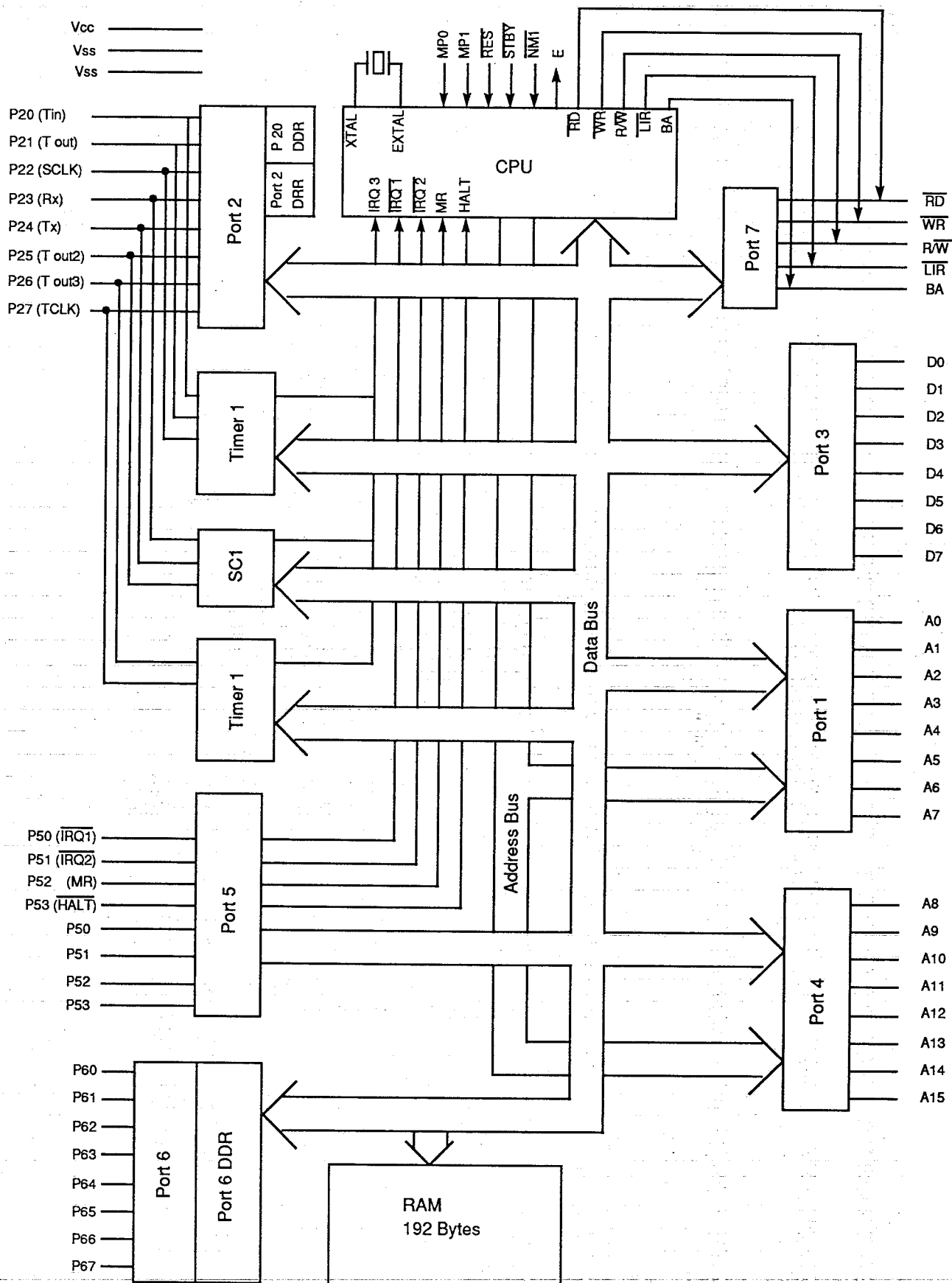


Fig. 12-3

4) Pin description(HD63A03X)

Pin No.	Symbol	Signal name	In/Out	Function
1	VSS	GND	In	GND connected.
2	XTAL	XTAL	In	4.9152MHz crystal oscillator connection
3	EXTAL	EXTAL	In	4.9152MHz crystal oscillator connection
4	MP0	VCC	In	CPU mode-1 selection (+5V connected)
5	MP1	GND	In	CPU mode-1 selection (GND connected)
6	RES	RESET	In	Reset input,active low
7	STBY	VCC	In	Standby input,not used.
8	MNI	SPRQ	In	Non-maskable interrupt input for SSP interrupt input.
9	P20	NU	—	NU
10	P21	NU	—	NU
11	P22	ER	Out	SIO control signal
12	P23	RX	In	Serial data input
13	P24	TX	Out	Serial data output
14	P25	NU	—	NU
15	P26	NU	—	NU
16	P27	STOP	Out	System reset output.Normally,high
17	IRQ1	IRQ	In	Peripheral device interrupt input
18	IRQ2	POFF	In	Interrupt input
19	MR	NU	In	Memory ready (Not used)
20	HALT	SPRQ	In	SSP circuit sync signal
21	P54	NE	In	Printer paper roll near end sense signal (Journal)
22	P55	VP	In	Validation paper sense signal
23	P56	NU	In	NU
24	P57	DR	In	SIO control signal (Data set ready)
25	P60	DR0	Out	Internal drawer open signal,Low=Open
26	P61	DR1	Out	Option drawer No.1 open signal,Low=Open
27	P62	DR2	Out	Option drawer No.2 open signal,Low=Open
28	P63	DR3	Out	Option drawer No.3 open signal,Low=Open
29	P64	DOPN	In	Drawer open signal
30	P65	IFV	In	SLIP signal
31	P66	TOF	In	SLIP paper signal
32	P67	BOF	In	SLIP paper signal
33	VCC	VCC	In	+5V
34	A15	A15	Out	High order address output (High order address bus(A15~A8))
35	A14	A14	Out	High order address output (High order address bus(A15~A8))
36	A13	A13	Out	High order address output (High order address bus(A15~A8))
37	A12	A12	Out	High order address output (High order address bus(A15~A8))
38	A11	A11	Out	High order address output (High order address bus(A15~A8))
39	A10	A10	Out	High order address output (High order address bus(A15~A8))
40	A9	A9	Out	High order address output (High order address bus(A15~A8))
41	A8	A8	Out	High order address output (High order address bus(A15~A8))
42	VSS	GND	In	GND connected
43	A7	A7	Out	Low order address output (Low order address bus A7~A0)
44	A6	A6	Out	Low order address output (Low order address bus A7~A0)
45	A5	A5	Out	Low order address output (Low order address bus A7~A0)
46	A4	A4	Out	Low order address output (Low order address bus A7~A0)
47	A3	A3	Out	Low order address output (Low order address bus A7~A0)
48	A2	A2	Out	Low order address output (Low order address bus A7~A0)
49	A1	A1	Out	Low order address output (Low order address bus A7~A0)
50	A0	A0	Out	Low order address output (Low order address bus A7~A0)
51	D7	D7	In/Out	Data bus
52	D6	D6	In/Out	Data bus
53	D5	D5	In/Out	Data bus
54	D4	D4	In/Out	Data bus
55	D3	D3	In/Out	Data bus
56	D2	D2	In/Out	Data bus
57	D1	D1	In/Out	Data bus
58	D0	D0	In/Out	Data bus

Pin No.	Symbol	Signal name	In/Out	Function
59	BA	BA	Out	Indicates release of the address data bus line in the halt state.
60	LIR	LIR	Out	Data on the data bus are loaded in the CPU command register.
61	R/W	R/W	Out	Read/write signal; Low=Write, High=Read
62	WR	WR	Out	Write signal
63	RD	RD	Out	Read signal
64	E	E	Out	External system clock (f=1.2288MHz)

NOTE: (*)Standby mode

All lines go to high impedance except for power on XTAL.EXTAL.

12-2-2. LZ95N13 description

This chip is a semi-custom LSI that uses the SHARP LZ95 series CMOS gate array which has been designed for the memory mapping and peripheral controller which is called MPCA3.

1) Features

- ① An 8-bit serial interface which can be connected with a 4-bit microcomputer (CKDCIII).
- ② Internal interrupt control circuits (edge trigger x 1, level sense x 7).
- ③ Two internal 8-bit memory expansion bank registers
ROM bank register (BRB, 8-bit, 256-bank compatible)
RAM bank register (BRA, 8-bit, 256-bank compatible)
- ④ Internal chip select feature
Three I/O device chip selects
Memory chip select (two for ROM, three for RAM)
MPCIII internal chip select signal generation
- ⑤ Internal SSP control circuit
- ⑥ Printer control circuit and internal buffer gate
Motor drive control
Dot drive pulse control (programmable)
- ⑦ Internal fiscal memory power supply control circuit

2) MPCA3 gate array pin description

Pin No.	I/O	Signal name	Pin No.	I/O	Signal name
1	O	M240	18		GND
2	O	RAS2	19	IO	D4
3	O	RAS1	20	IO	D5
4	ICS	STH	21	IO	D6
5	O	HTS	22	IO	D7
6	O	SCK	23	I	A0
7	ICS	INT4 (KRQ)	24	I	A9
8	ICS	INT0 (SHEN)	25	I	A10
9	ICS	RESET	26	I	A11
10	IS	E	27	I	A12
11	I	RD	28	I	A13
12	I	WR	29	I	A14
13	I	LIR	30	I	A15
14	IO	D0	31	O	IRQ
15	IO	D1	32	ICS	POF
16	IO	D2	33	O	SSPRQ
17	IO	D3	34	ON6M	VRESC

Pin No.	I/O	Signal name	Pin No.	I/O	Signal name
35	IU	SSPD	68	ICS	TS
36	O	WR	69	ICS	MTR
37	O	RD	70	O	RAS3
38	ON6M	VPON	71	O	B7
39	O	E2	72	O	B6
40		GND	73	O	B5
41	O	E1	74	O	B4
42	ICS	INT5	75		GND
43	ICS	INT1 (RSRQ)	76	O	B3
44	ICS	INT3 (TRRQ)	77	O	B2
45	O	SPCS	78	O	B1
46	ON6M	PFJO	79	O	B0
47	ON6M	PFRO	80	O	PRCS
48	ON6M	STMPO	81	ICS	INT2 (PRQ)
49	OM6M	MTS	82	ICSU	DT1
50	ON6M	MTD	83	ICSU	DT2
51		VCC	84	ICSU	DT3
52	ON6M	DTS7	85	ICSU	DT4
53	ON6M	DTS6	86	ICSU	DT5
54	ON6M	DTS5	87	ICSU	DT6
55	ON6M	DTS4	88	ICSU	DT7
56		GND	89		VCC
57	ON6M	DTS3	90		GND
58	ON6M	DTS2	91	ICSU	TRG
59	ON6M	DTS1	92	ICSU	STMP5
60	O	FMICS	93	ICS	MTDS
61	ON6M	RES	94	O	TMG
62	ISU	VCON	95	O	RL
63	O	ROS1	96	O	RR
64	O	ROS2	97	ICSU	PFRS
65	ISU	TSL	98	ICSU	PFJS
66	ICS	RRJ	99	ICSU	PSEL
67	ICS	RRR	100	OM6M	OPTCS

- I : TTL level input
- IS : TTL level input (internal Schmitt circuit)
- ISU : TTL level input (internal Schmitt and pullup resistor)
- IU : TTL input (internal pullup resistor)
- ICS : CMOS level input (internal Schmitt circuit)
- ICSU : CMOS level input (internal Schmitt and pullup resistor)
- O : Output (4mA)
- OM6M : Output (6mA)
- ON6M : N-ch open drain output (6mA)
- IO : Input/output



— 60 —

3) MPCAIll signal description

Pin name	In/Out	Description
VCC		+5V±5%
GND		Power supply GND
RESET	In	MPCIII reset, active low
RES	Out	Peripheral output reset, active low
LIR	In	SSP control signal, active low. Instruction fetch detection.
E	In	E clock input from CPU
E1, E2	Out	Peripheral output E clock
RD, WR	In	Read/write strobe input from CPU
RD, WR	Out	Peripheral output read/write strobe
A15~A9 A0	In	Chip select decoder address. A0 for register selection.
D7~D0	In/Out	Connected with the CPU 8-bit data bus. High impedance except when the read strobe is active in the bidirectional bus.
SSPD	In	Data input from the SSP monitor RAM.
SPCS	Out	Chip select signal to monitor RAM.
SSPRQ	Out	SSP interrupt request to CPU.
IRQ	Out	Interrupt request to CPU.
INT0~5	In	Interrupt signal INT0 : Low edge interrupt request INT1~5 : Low level interrupt request
B7~B0	Out	Address expansion bank information signal output. Contents of the bank register BRA or BRB are sent according to the state of the address decoder.
STH	In	8-bit serial port input
HTS	Out	8-bit serial port output
SCK	Out	Serial port shift clock output
ROS1 ROS2	Out	ROM device chip select output, active low.
RAS1 RAS2 RAS3	Out	RAM device chip select output, active high.
FMICS	Out	FM controller interface device chip select output, active low. (Not use for ER-3250)
PRCS	Out	Printer controller device chip select output, active low. (Not use for ER-3250)
OPTCS	Out	Option device chip select base signal output, active low. (Not use for ER-3250)
POF	In	Power supply test input, active low. (Not use for ER-3250)
VRESC	Out	Turns active when rest and power down is met, active high. (Not use for ER-3250)
VCON	In	Fiscal memory power supply control input, active low. (Not use for ER-3250)
VPON	Out	Fiscal memory power supply control input, active high.
RSEL	In	Printer select signal input, active low.
M240	Out	Printer select signal output, active low.
PFJO PFRO STMPO	Out	Receipt/journal printer paper feed control signal and stamp control signal output, active high.
PFJS PFRS STMPs	In	Receipt/journal printer paper feed control signal and stamp control signal input, active low.
DT1~7	In	Dot drive input signal, active low.
DTS1~7	Out	Dot drive output signal. Output enabled until the programmable timer goes out of the time, active high.
MTR MTDS	In	Motor drive control signal. MTR, active high. -MTDS, active low.
MTD MTS	Out	Motor drive and brake control signal output, active high.
TRG	In	Print enable trigger input signal, active low.
RRJ, RRR	In	Receipt/journal printer reset pulse input, active high.
RR, RL	Out	\Receipt/journal printer reset pulse output, active high.
TS	In	Timing pulse input, active high.
TMG	Out	Timing pulse output, active low.
TSL	In	Slip printer timing pulse input, active high.

4) MPCA3 block diagram

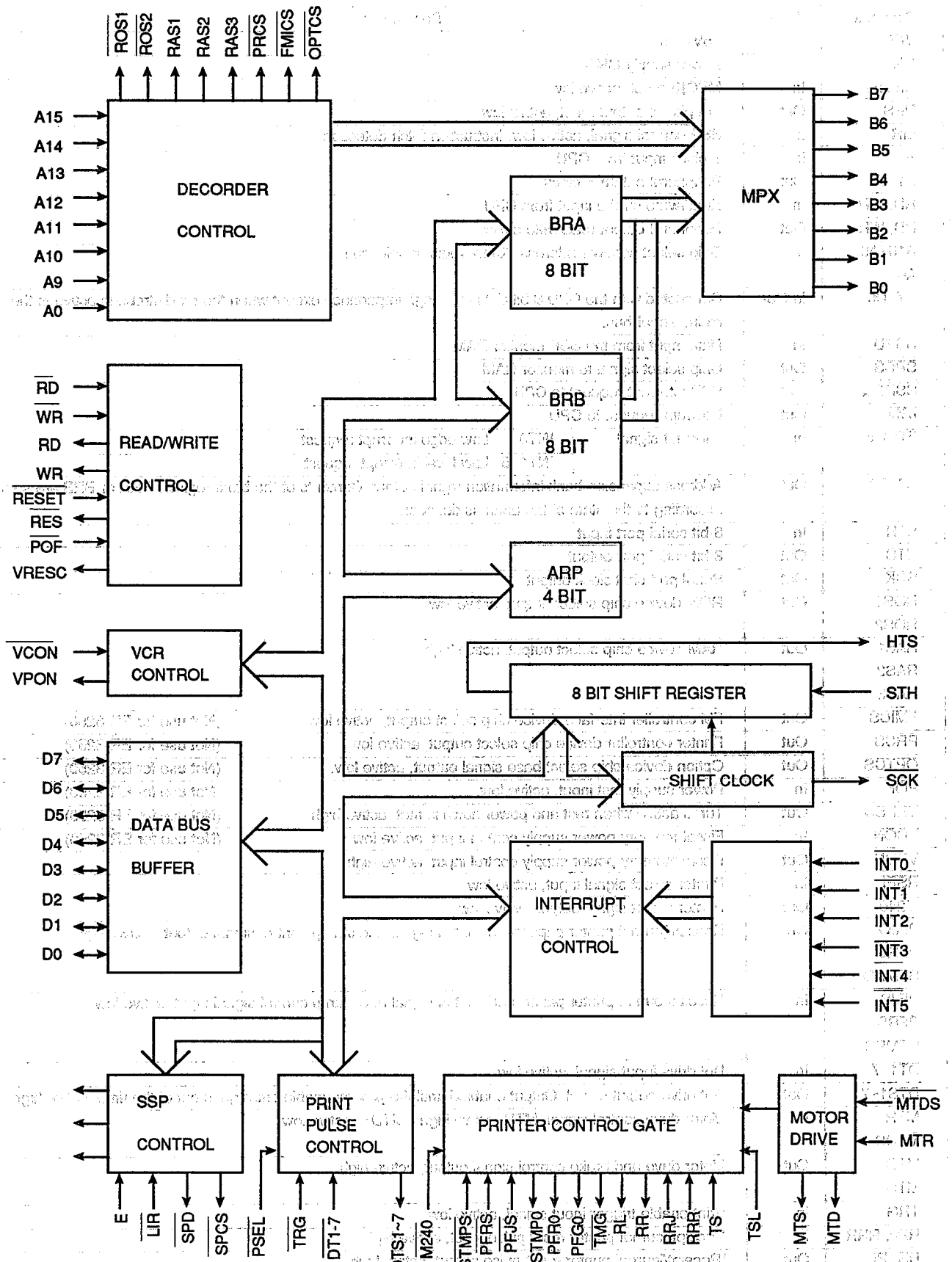


Fig.12-5

12-2-3. CKDCIII (HD404728A20FS) description

(1) General

The CKDCIII is a 4-bit microcomputer developed for the ER-3250 and provides functions to control the real-time clock, keys, and displays. The basic functions of the CKDCIII are shown below.

Keys: The CKDCIII is capable of controlling a maximum of 253 momentary keys. (Sharp 2-key rollover control)
Simultaneous scanning of key and switch
(When a key is scanned, the state of a mode, clerk, and other switch is also buffered. The host can scan the state of switch together with the key entry data at the same time the key is scanned.)

Switches: Mode switch with 14 positions maximum

8-bit clerk(cashier)switch

2-bit feed switch

1-bit receipt on/off switch

1-bit option switch

4-bit general-purpose switch(1-bit is used for keyboard select)

Displays: 16-column dot display

12-column 7-segment display (column digit selectable)

All column blink controlled for the dot and 7-segment display decimal point and indicators

Programmable patterns for 7-segment display:

Four patterns

Internal driver for 7-segment display

Buzzer: Single tone control

Clock: Year, month, day of month, day of week, hour, minute

Alarm: Hour, minute

Interrupt request (event control):

Detection of key input, switch position change, alarm issue, and counter overflow

(2) Pin assignment

Pin No.	Port	RESET standard			Signal name	Notes	PULL-UP -DOWN
		I/O	State	I/O			
1	R0 ₁	I/O	H-Z	O	SB	SEG-B	100kΩ PULL-DOWN
2	R0 ₂	I/O	H-Z	O	SC	SEG-C	100kΩ PULL-DOWN
3	R0 ₃	I/O	H-Z	O	SD	SEG-D	100kΩ PULL-DOWN
4	R1 ₀	I/O	H-Z	O	SE	SEG-E	100kΩ PULL-DOWN
5	R1 ₁	I/O	H-Z	O	SF	SEG-F	100kΩ PULL-DOWN
6	R1 ₂	I/O	H-Z	O	SG	SEG-G	100kΩ PULL-DOWN
7	R1 ₃	I/O	H-Z	O	P4	AP	100kΩ PULL-DOWN
8	R2 ₀	I/O	H-Z	O	P0	DDP	100kΩ PULL-DOWN
9	R2 ₁	I/O	H-Z	O	P1	DID	100kΩ PULL-DOWN
10	R2 ₂	I/O	H-Z	O	P2	DP	100kΩ PULL-DOWN
11	R2 ₃	I/O	H-Z	O	P3	ID	100kΩ PULL-DOWN
12	RA ₀	I	I	I	MODR	MODE RETURN from KEY BOARD UNIT	
13	RA ₁	I	I	I	CFSR	CLEAR, FEED, SWITCH: RETURN from KEYBOARD	
14	R3 ₀	I/O	H-Z	O	CGA0		
15	R3 ₁	I/O	H-Z	O	CGA1		
16	R3 ₂	I/O	H-Z	O	CGA2		
17	R3 ₃	I/O	H-Z	O	CGA3		

Pin No.	Port	RESET standard			Signal name	Notes	PULL-UP -DOWN
		I/O	State	I/O			
18	R5 ₀	I/O	I	O	ST0	ST0	Key SCAN timing signal (to KEY UNIT)
19	R5 ₁	I/O	I	O	ST1	ST1	
20	R5 ₂	I/O	I	O	ST2	ST2	
21	R5 ₃	I/O	I	O	ST3	ST3	
22	R6 ₀ /INT0	I/O	I	I	POFF	P-OFF signal input	
23	R6 ₀ /INT1	I/O	I	I	STOP	STOP request signal from HOST CPU input	
24	R6 ₀ /INT2	I/O	I	O	SHEN	SHEN output (To MPCIII INT0)	
25	R6 ₀ /INT3	I/O	I	O	KRQ	KRQ output (To MPCIII INT4)	
26	Vcc				VCKDC	Power supply	
27	R4 ₀ /SCK	I/O	I	I	SCK	SCK input	
28	R4 ₀ /SI	I/O	I	I	HTS	HTS	
29	R4 ₀ /SO	I/O	I	O	STH	STH	
30	R4 ₀ /PWM	I/O	I	I		GND	
31	R7 ₀ /BUZZ	I/O	I	O	BUZZ	BUZZER	
32	R7 ₁	I/O	I	O	ENST		
33	R7 ₂	I/O	I	O	RESETS	SYSTEM RESET	10kΩ PULL-DOWN
34	R7 ₃	I/O	I	O	CGA7	NOT USE	
35	R8 ₀	I/O	I	O	KEX0	KEY EXCHANGE0 OUTPUT to KEY UNIT	
36	R8 ₁	I/O	I	O	KEX1	KEY EXCHANGE1 OUTPUT to KEY UNIT	
37	R9 ₀	I	I	I	KR0	KEY RETURN INPUT from KEY UNIT	
38	R9 ₁	I	I	I	KR1	KEY RETURN INPUT from KEY UNIT	
39	R9 ₂	I	I	I	KR2	KEY RETURN INPUT from KEY UNIT	
40	R9 ₃	I	I	I	KR3	KEY RETURN INPUT from KEY UNIT	
41	RESET					CKDC III RESET	220Ω PULL-DOWN
42	OSC2					4.19MHz	
43	OSC1						
44	GND					GND	
45	CL1					38.768KHz	
46	CL2						
47	TEST	I	I			+5V	
48	D0	I/O	H-Z	O	—	CGA4	
49	D1	I/O	H-Z	O	—	CGA5	
50	D2	I/O	H-Z	O	—	CGA6	
51	D3	I/O	H-Z	I	(RQ)	GND (NOT USED)	
52	D4	I/O	H-Z	O		NOT USE	
53	D5	I/O	H-Z	O			
54	D6	I/O	H-Z	O			
55	D7	I/O	H-Z	O			
56	D8	I/O	H-Z	O			
57	D9	I/O	H-Z	O	G1	7SEG DIG 1	100kΩ PULL-DOWN
58	D10	I/O	H-Z	O	G2	7SEG DIG 2	100kΩ PULL-DOWN
59	D11	I/O	H-Z	O	G3	7SEG DIG 3	100kΩ PULL-DOWN
60	D12	I/O	H-Z	O	G4	7SEG DIG 4	100kΩ PULL-DOWN
61	D13	I/O	H-Z	O	G5	7SEG DIG 5	100kΩ PULL-DOWN
62	D14	I/O	H-Z	O	G6	7SEG DIG 6	100kΩ PULL-DOWN
63	D15	I/O	H-Z	O	G7	7SEG DIG 7	100kΩ PULL-DOWN
64	D00	I/O	H-Z	O	SA	SEG-A	100kΩ PULL-DOWN

NOTE 3: Pull-up/down in the table indicates that the lines concerned require external pull-up/down resistance.

12-2-4. PRC (HD643308F) description

1) Pin configuration

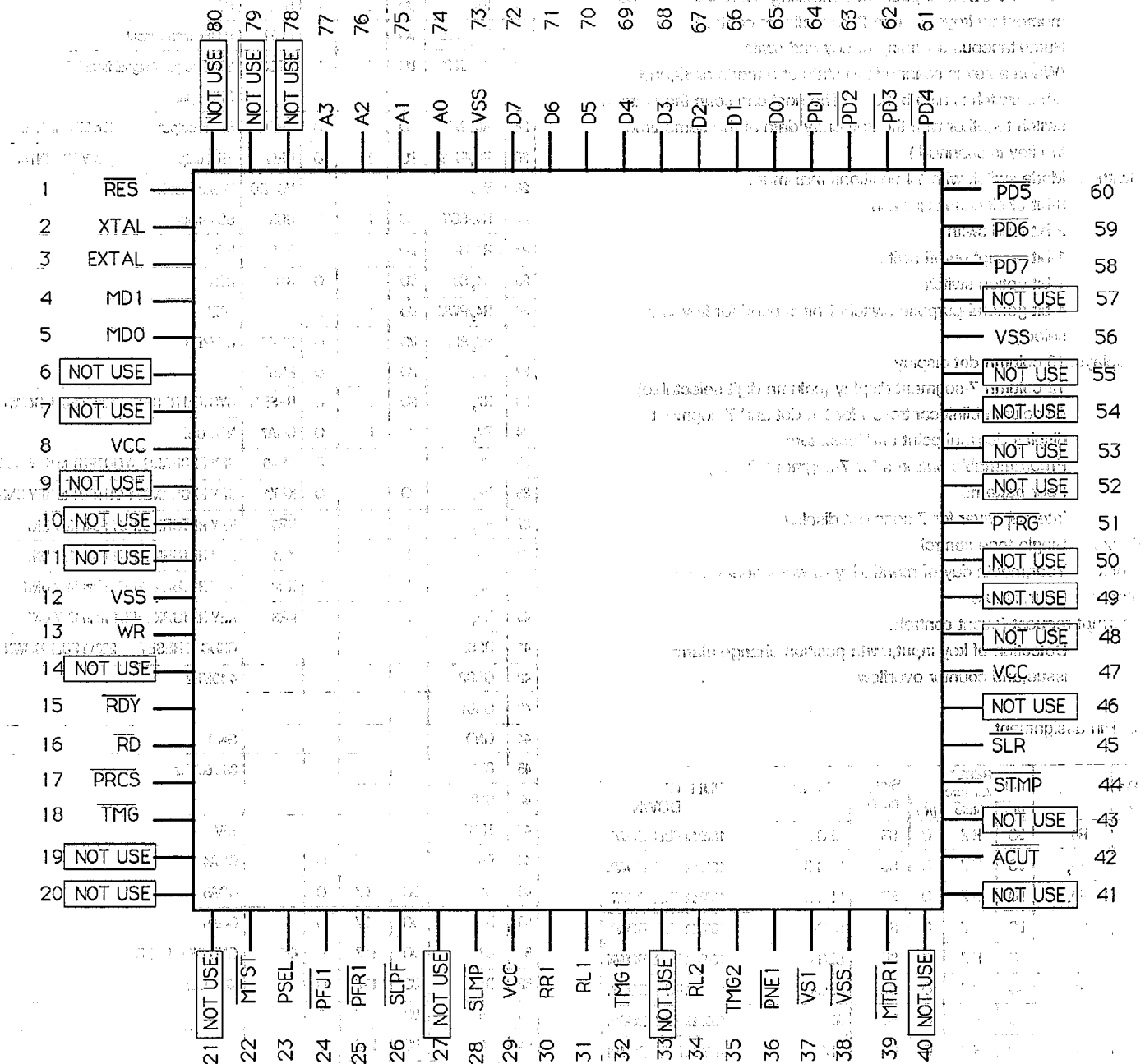


Fig. 12-6

2) Pin description

Pin No.	Pin Name	Signal Name	I/O	Active level	Initial state	Functional description
1	RES-	RES-	I	LOW		System reset signal
2,3	XTAL/EWTAL	XTAL/EXTAL	I/O	—	—	8.0MHz clock input
4,5	MD1/MD0	MD1/MD0	I	—	IN	Mode select input for MODE 3
6	NMI-	—	I	—	IN	Not used (+5V)
7	STBY-	—	I	—	IN	Not used (+5V)
8,29,47	VCC	VCC	—	—	—	+5V supply
9,10,11	P52-P50	—	—	—	—	Not used (GND)
12,38,56 73	VSS	VSS	—	—	—	GND
13	WE-	WR-	I	LOW	IN	PCI write strobe
14	CLOCK	—	O	—	IN	Not used (open)
15	RDY-	RDY-	O	LOW	IN	Interrupt request to host
16	OE-	RD-	I	LOW	IN	PCI read strobe
17	CS-	PRCS-	I	LOW	IN	Printer controller chip select
18	IRQ0-	TMG-	I	LOW-EDGE	IN	Timing pulse input
19	P91	—	—	—	IN	Not used (TOF signal sense deleted)
20	P90	—	—	—	IN	Not used (BOF signal sense deleted)
21	P60	—	O	—	IN	Not used (open)
22	P61	MTST-	O	LOW	IN	Motor stop signal
23	P62	PSEL-	O	—	IN	Printer select signal
24	P63	PFJ1-	O	LOW	IN	M2640 journal paper feed signal
25	P64	PFR1-	O	LOW	IN	M2640 receipt paper feed signal
26	P65	SLPF-	O	LOW	IN	M240 slip paper feed signal
27	P66	—	O	—	IN	Not used (open)
28	P67	SLMP-	O	LOW	IN	Slip lamp drive signal (Not use open)
30	P70	RR1	I	HIGH	IN	M2640 reset signal (right side)
31	P71	RL1	I	HIGH	IN	M2640 reset signal (left side)
32	P72	TMG1	I	LOW	IN	M2640 timing signal
33	P73	—	I	—	IN	Not used (GND)
34	P74	RL2	I	HIGH	IN	M240 reset signal
35	P75	TMG2	I	LOW	IN	M240 timing signal
36	P76	PNE1-	I	LOW	IN	M2640 paper near end sense signal
37	P77	VS1-	I	LOW	IN	M2640 validation sense signal
39	P40	MTDR1-	O	LOW	IN	Motor drive signal
40	P41	—	O	—	IN	Not used (open)
41	P42	—	I	—	IN	Not used (+5V)
42	P43	ACUT-	O	LOW	IN	Auto cutter drive signal
43	P44	—	O	—	IN	Not used (open)
44	P45	STMP-	O	LOW	IN	Stamp drive signal
45	P46	SLR-	O	LOW	IN	Slip release drive signal
46	P47	—	I	—	IN	Not used (+5V)
48	P27	—	I	—	IN	Not used (+5V)
49	P26	—	O	—	IN	Not used (open)
50	P25	—	O	—	IN	Not used (open)
51	P24	PRTG-	O	LOW	IN	Printer trigger output
52	P23	—	O	—	IN	Not used (open)
53	P22	—	O	—	IN	Not used (open)

Pin No.	Pin Name	Signal Name	I/O	Active level	Initial state	Functional description
54	P21	—	O	—	IN	Not used (open)
55	P20	—	O	—	IN	Not used (open)
57	P17	—	O	—	IN	Not used (open)
58	P16	PD7-	O	LOW	IN	Printhead drive signal (dot 7)
59	P15	PD6-	O	LOW	IN	Printhead drive signal (dot 6)
60	P14	PD5-	O	LOW	IN	Printhead drive signal (dot 5)
61	P13	PD4-	O	LOW	IN	Printhead drive signal (dot 4)
62	P12	PD3-	O	LOW	IN	Printhead drive signal (dot 3)
63	P11	PD2-	O	LOW	IN	Printhead drive signal (dot 2)
64	P10	PD1-	O	LOW	IN	Printhead drive signal (dot 1)
65	D0	D0	I/O	—	IN	Data bus
66	D1	D1	I/O	—	IN	Data bus
67	D2	D2	I/O	—	IN	Data bus
68	D3	D3	I/O	—	IN	Data bus
69	D4	D4	I/O	—	IN	Data bus
70	D5	D5	I/O	—	IN	Data bus
71	D6	D6	I/O	—	IN	Data bus
72	D7	D7	I/O	—	IN	Data bus
74	RS0	A0	I	—	IN	Register select address input
75	RS1	A1	I	—	IN	Register select address input
76	RS2	A2	I	—	IN	Register select address input
77	RS3	A3	I	—	IN	Register select address input
78	P84	—	I	—	IN	Not used (GND)
79	P85	—	I	—	IN	Not used (GND)
80	P86	—	I	—	IN	Not used (GND)

12-3. Clock generator

1) CPU (HD63A03X)

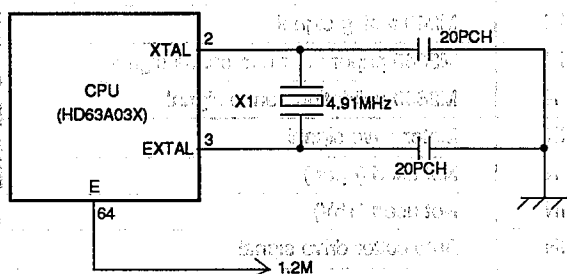


Fig. 12-7

Basic clock is supplied from a 4.91MHz ceramic oscillator. The CPU contains an oscillation circuit from which the basic clock is internally derived. If the CPU was not operating properly, the signal does not appear on this line in most cases.

2) PRC (HD643308F)

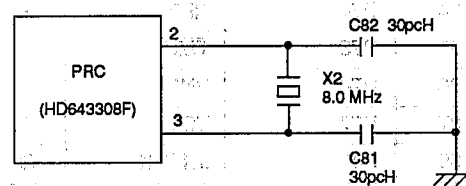


Fig. 12-8

The PRC creates the operation clock by the X2 8.0MHz oscillator.

3) HD404728A20FS CKDC-III oscillation circuit
(Dispaly-PWB)

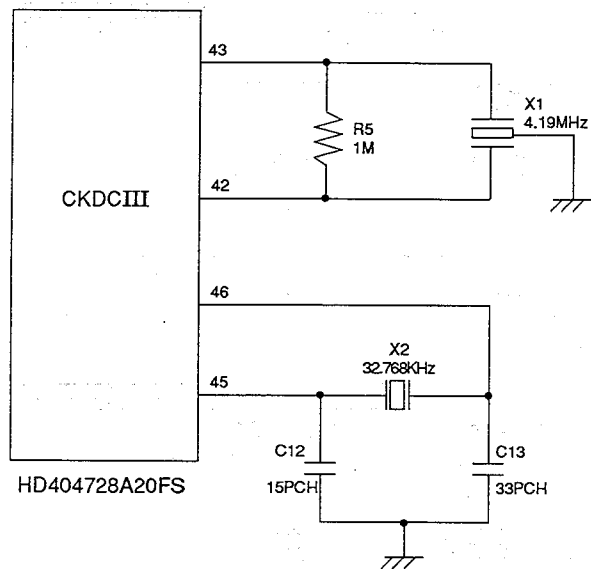


Fig. 12-9

Two oscillators are connected to the CKDC-III.
The main clock X1 generates 4.19MHz which is used during power on.
When power is turned off, the CKDC-III goes into the standby mode and the main clock stops.
The sub-clock X2 generates 32.768KHz which is primarily used to undate the internal RTC (real time clock). During the standby mode, it keeps oscillating to update the clock and monitoring the power recovery.

12-4. Reset (POFF) circuit

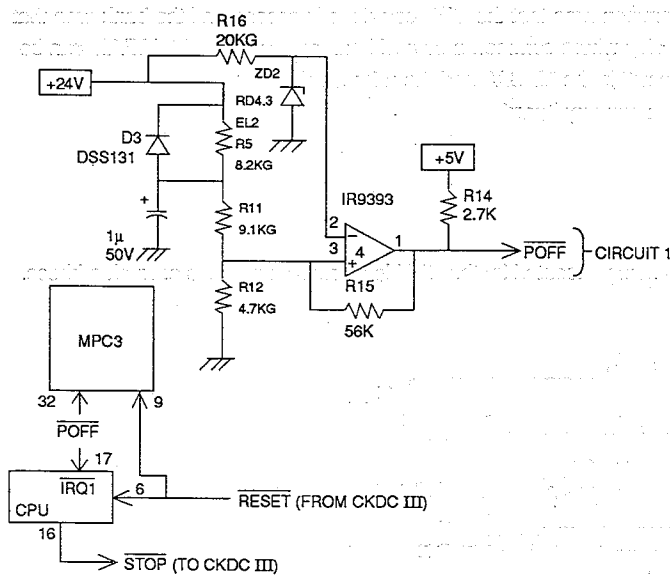


Fig. 12-10

In order to prevent memory loss at a time of power off and power supply failure of the ECR, the power supply condition is monitored at all times. When a power failure is met, the CPU suspends the execution of the current program and immediately executes the

power-off program to save the data in the CPU registers in the external S-RAM with the signal STOP forced low to prepare for the power-off situation. The signal STOP is supplied to the CKDC-III as signal RESET to reset the devices.
This circuit monitors +24V supply voltage.
The voltage at the (-) pin of the comparater IR9393 is always maintained to 4.3V by means of the zener diode ZD2, while +24V supply voltage is divided through the resistors R5, R11, and R12, and is applied to the (+) pin. When normal +24V is in supply, 5.1V is supplied to the (+) pin, therefore, signal POFF is at a high level. When +24V supply voltage decreases due to a power off or any other reason, the voltage at the (+) pin also decreases. When +24V supply voltage drops, the voltage at the (+) pin drops below +4.3V, which causes POFF to go low, thus predicting the power-off situation.

12-5. Memory control

1) < Memory map >

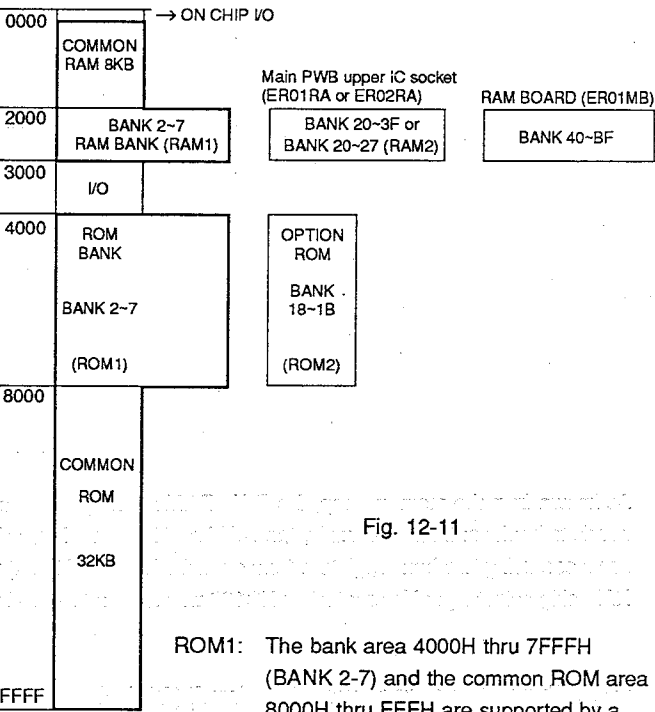


Fig. 12-11

ROM1: The bank area 4000H thru 7FFFFH (BANK 2-7) and the common ROM area 8000H thru FFFFH are supported by a single chip (128KB).

- ROM2 (option): The bank area 4000H thru 7FFFFH (BANK18H-1BH) is supported.
- RAM1: The common area 0000 thru 1FFFFH and the bank area 2000H thru 2FFFFH (BANK 2-7) is supported by a single chip.
- RAM2 (option): The bank area 2000H thru 2FFFFH is supported.
 - ER-01RA: 20H-27H bank (32KB)
 - ER-02RA: 20H-3FH bank (128KB)
- ER-01MB: The bank area 2000H thru 2FFFFH is supported.
 - ER-01MB: 40H-5FH (128KB)
 - ER-01MB + ER-02RA x 1: 40H-7FH (256KB)
 - ER-01MB + ER-02RA x 2: 20H-9FH (384KB)
 - ER-01MB + ER-02RA x 3: 40H-BFH (512KB)

NOTE:For the actual bank area used by the software, obtain the printout by JOB#979 in the SRV mode to refer.

2) < Block diagram >

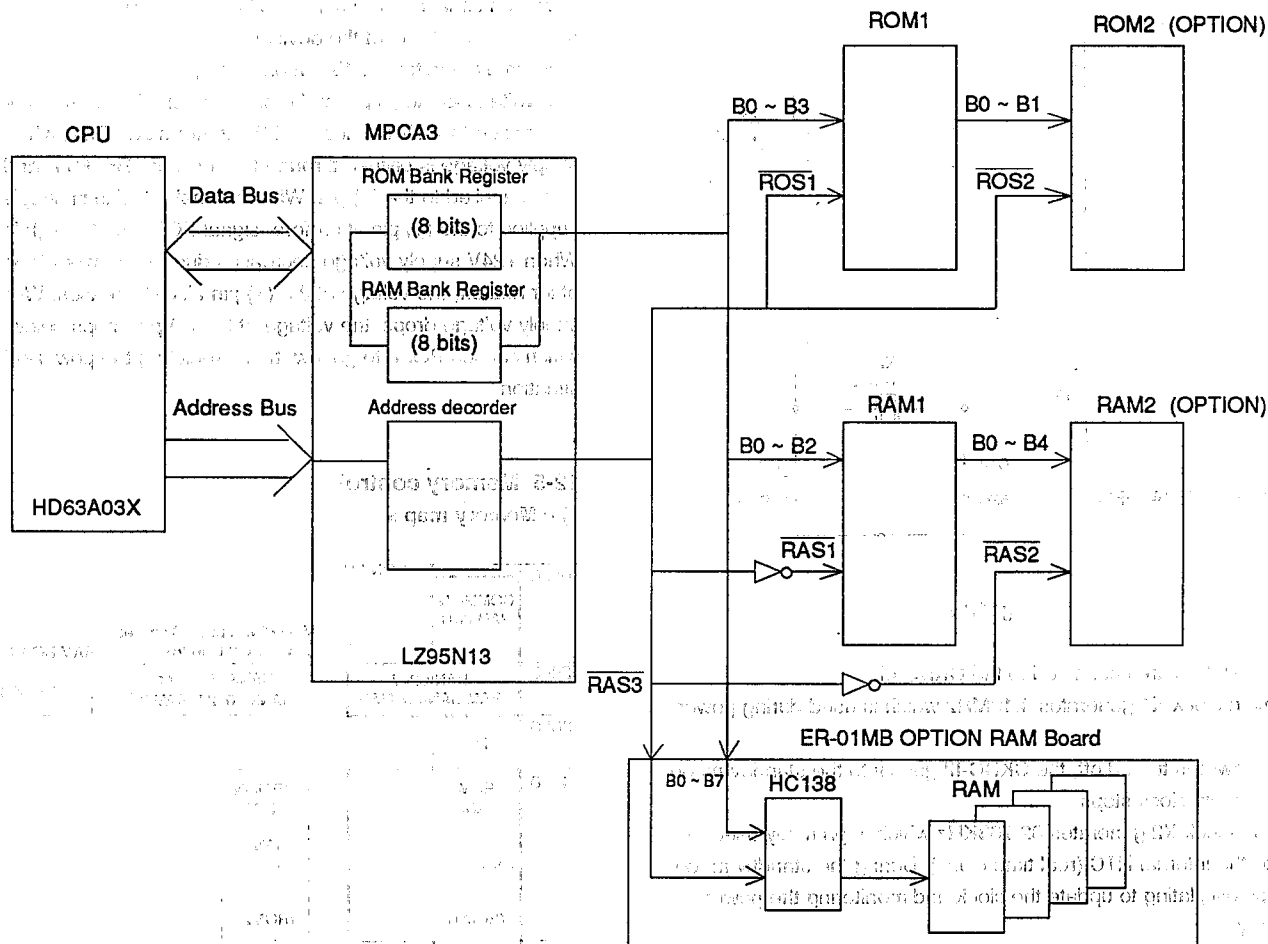


Fig. 12-12

As known from the memory map, the ROM/RAM memory consists of the common area that the CPU can directly access and the bank area that needs to be bank controlled. Actually, the ROM and RAM are housed within a chip where common areas and bank areas coexist. ROM/RAM can be accessed using two bank registers (one each for ROM and RAM) which are within the MPCA3 and the address decoder. RAM chip select signal is created by HC138 which is on the ER-01MB option memory board.

12-6. Execution address monitor circuit (SSP circuit)

This is the circuit employed to do the Special Service Preset (SSP).

The LH5167 is 16K x 1 bit monitor RAM which is used to see if the address being executed by the CPU is a program address or mark address.

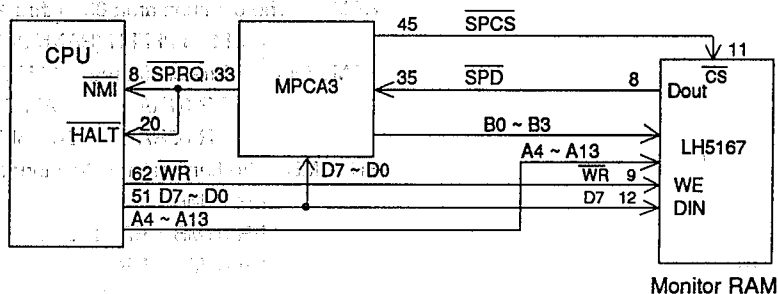


Fig. 12-13

12-7. PRINTER control circuit

1) Block diagram

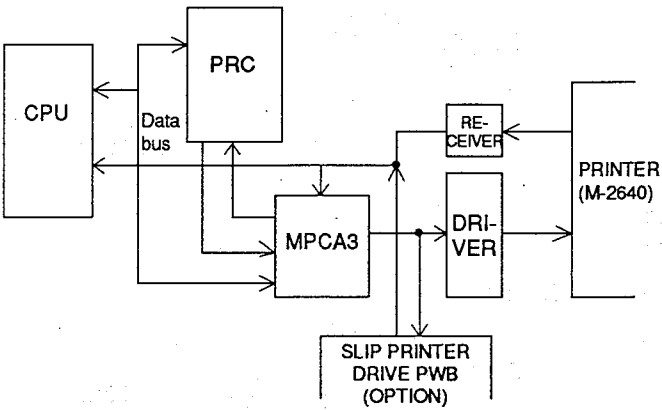


Fig. 12-14

2) General description of the printer controller

An M-2640 receipt/journal printer and an M-240 slip printer may be connected to this model. Printer is controlled by PRC (HD643308F) provided exclusively. Command and data transfer between the CPU and the PRC is done through the dual port buffer within PRC. From PRC is sent the print control signals to MPCA3 at first. An independent printer drive control circuit provided in MPCA3 controls the printer. Signals from MPCA3 are used to control the printer operation via the driver. Signal output from the printer is read by MPCA3 via the receiver circuit, which is then corrected of its waveform within MPCA3 to be sent to PRC. (Normal signals are directly sent to the CPU port.)

3) Motor drive circuit

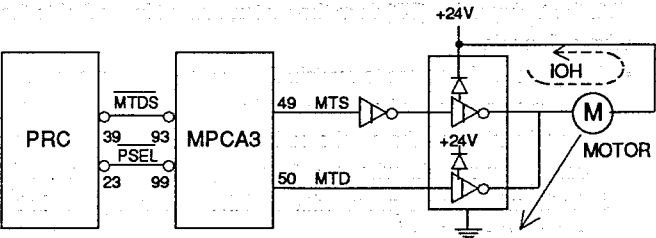


Fig. 12-15

PRC sets $\overline{\text{MTDS}}$ low to drive the motor.

MTDS	Low	MOTOR ON
	High	MOTOR OFF

Within MPCA3, $\overline{\text{MTDS}}$ is converted into MTS (motor stop) and MTD (motor drive).

The following circuit is provided in MPCA3 to avoid simultaneous activation of the brake signal with the drive signal.

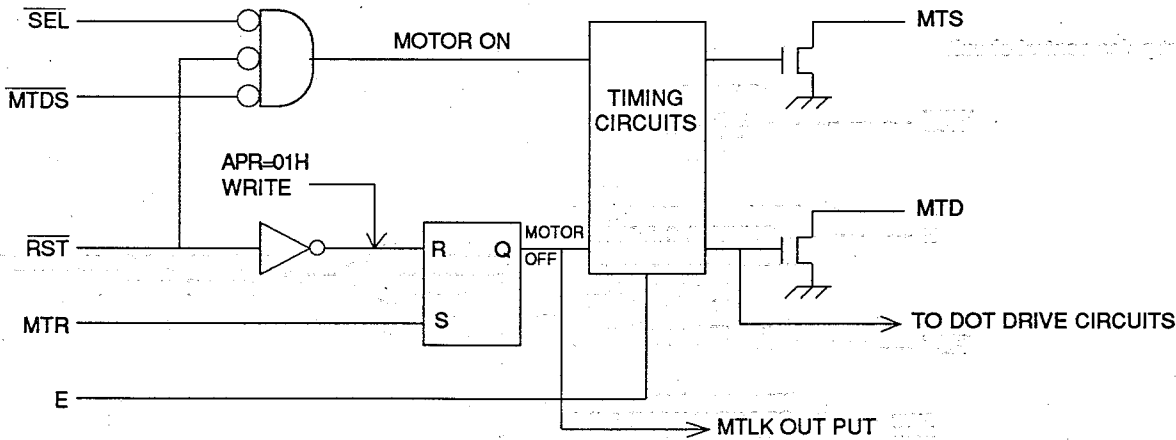


Fig. 12-16

MPCA3 internal circuit

PSEL•	MTDS•	RESET•	MTR•	MTD•	MTS•
X	X	X	1	L	L
1	X	X	0	L	H
X	1	X	0	L	H
X	X	0	0	L	H
0	0	1	0	H	L

But, as it has the timing circuit for the E clock, the truth table shows the state in 32 microseconds (NOTE*) after the input conditions are established.

(NOTE*): E clock has the frequency of 1.22875MHz.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

current is applied to the dot wire

- about 100% of total daily energy intake.

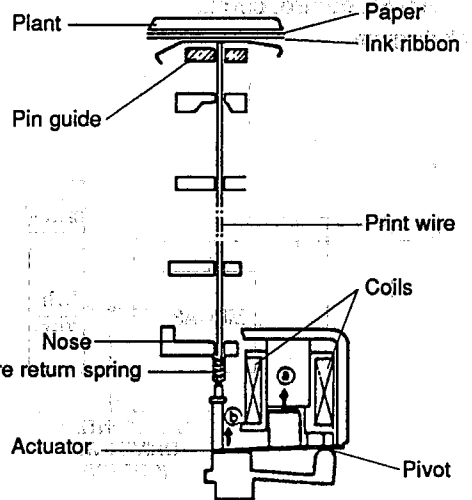


Fig. 12-17 Action of dot wire

control circuit

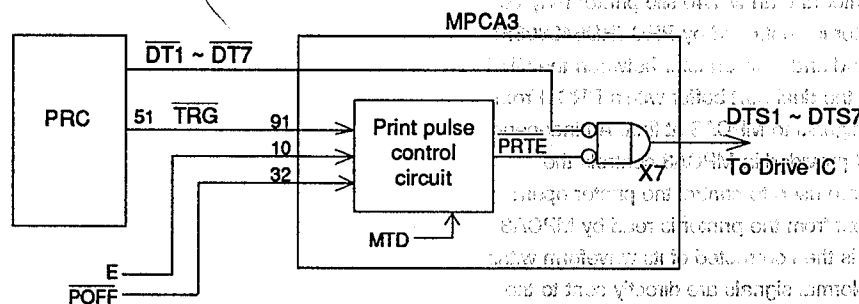


Fig. 12-18

Dot wire drive signals $\overline{\text{DT1}}$ thru $\overline{\text{DT7}}$ are received from PRC. The print pulse control circuit in MPCA3 determines the dot wire drive timing (duty). ($\overline{\text{PRTE}}$) For the MPCA3 outputs DTS1 thru DTS7 are open drain, they are connected with the solenoid drivers.

nt pulse control circuit

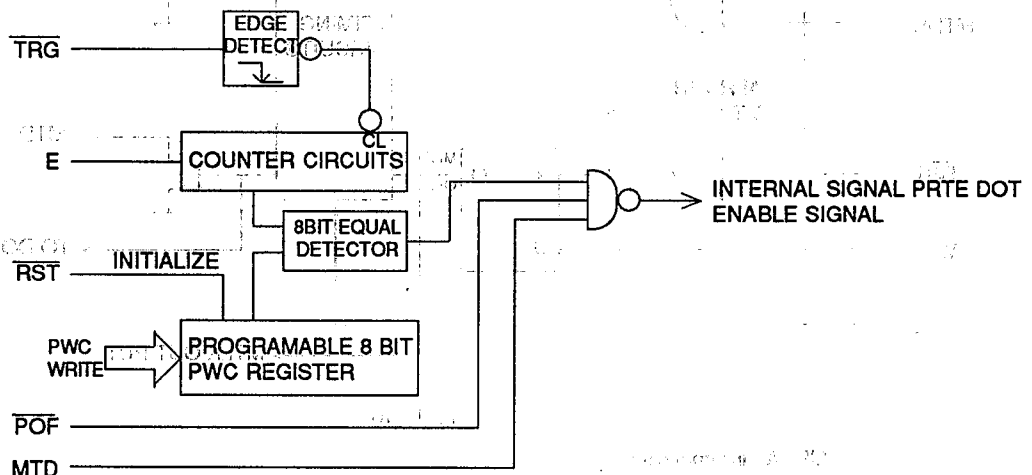


Fig. 12-19

Control is done so as to issue the dot signal in the timing that the counter may come time-out from the falling edge of the -RTG signal of the MTD signal.

The counter circuit is cleared with the -TRG signal, and it consists of the E clock incremented free-run counter and externally programmable 8-bit register PWC (APR-0FH), and the time-out is established when the high 8 bits of the free-run counter matches the PWC register.

The PWC register is possible to read/write and will be initialized to "7FH" with the hardware reset, while the free-run counter is not affected by the hardware reset.

Moter	TRG-	POF-	MTD	Dot Signal
OFF	X	X	X	L
X	X	0	X	L
X	X	X	0	L
ON	↓	1	1	ACTIVE

7) Dot solenoid drivers (solenoid 1 – 7)

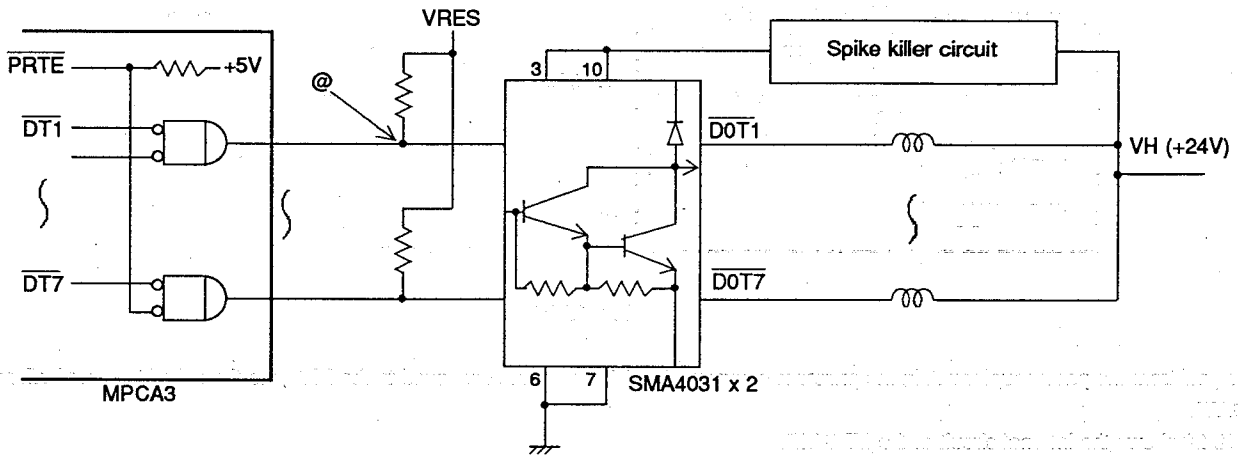


Fig. 12-20

Current to the dot solenoid is controlled in the following manner:

- VRES must be at a high level.
- At the same time $\overline{DT1}$ is set low, $\overline{TRG}$ must be set low.
- $\overline{PRTE}$ is now set low (MPC83).
- The signal is turned high at point @, the magnet driver output is set low, and then VH flows through the magnet driver.
- The dot wire now protrudes to hit and print.

8) Spike killer circuit

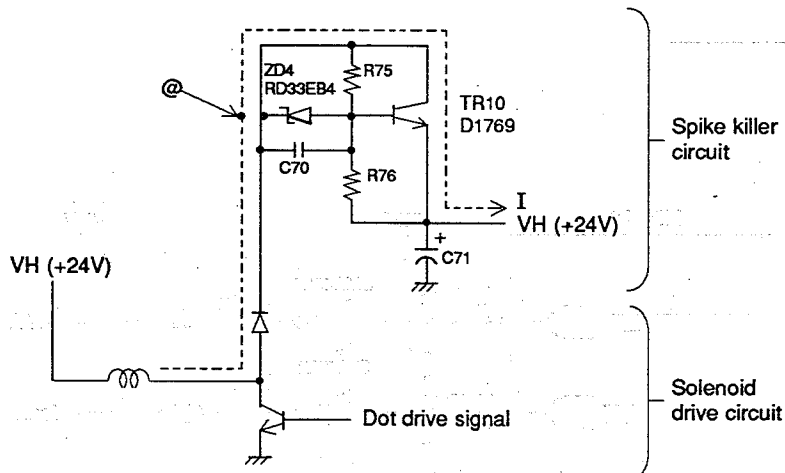


Fig. 12-21

According to the characteristics of the coil, counter-electromotive force is generated after current is applied to the coil. When the voltage at point @ reaches about 57V, the zener diode ZD4 (RD33EB4) opens, so then the transistor TR10 is set active and a current circuit is comprised as shown with broken line in Fig. 12-21, to cut the counter-electromotive force.

9) Sensor signal receive circuit

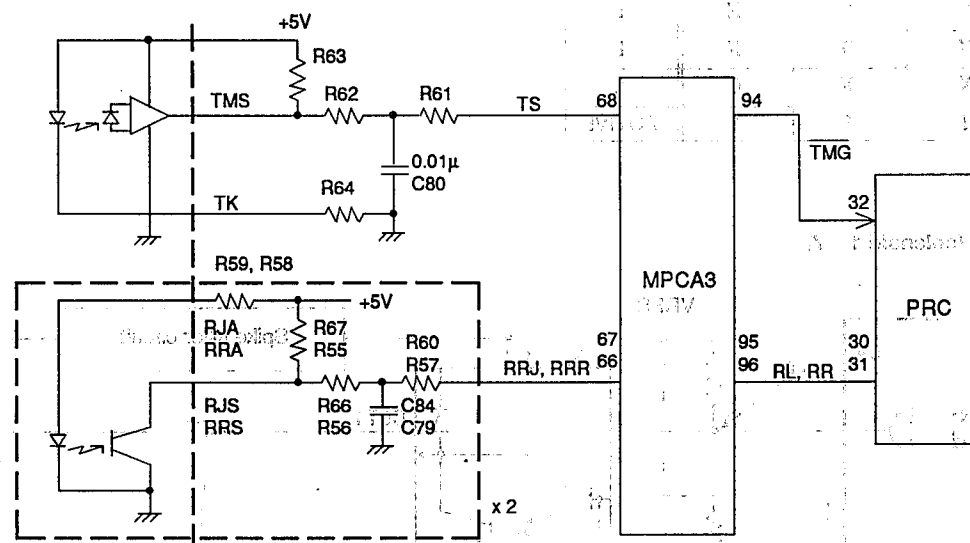


Fig. 12-22

The signal from the photocoupler within the printer is converted into TTL level and conveyed to the PRC, via the schmitt trigger buffer within the MPC4111.

Fig. 12-22 shows the internal circuit of the MPCAI3.

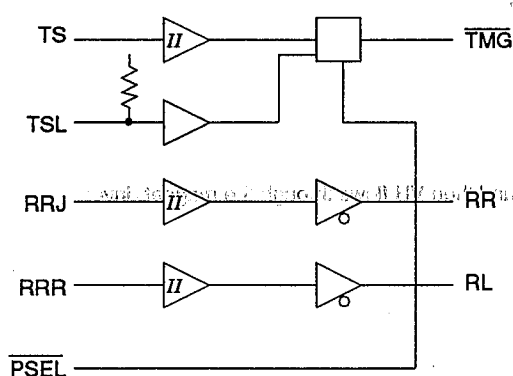


Fig. 12-23

PSL	T	RR	RL
0	TS	RRR	RRL
1	TSL	RRR	RRL

Table 12-4 Truth table

10) Paper feed and stamp circuit

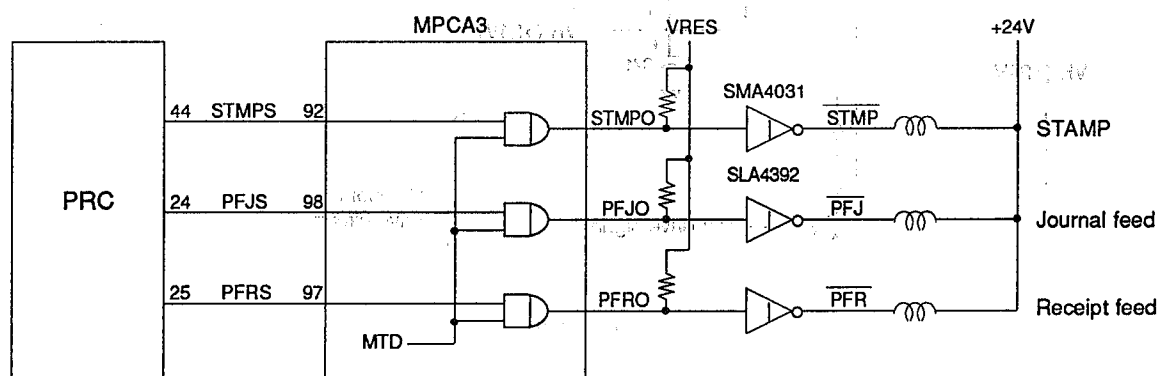


Fig. 12-24

The paper feed/stamp related signals issued from PRC turn into open drain outputs within MPCA3 and pulled up by the VRES signal to prevent action when the power supply is not steady.

12-8. Drawer drive circuit

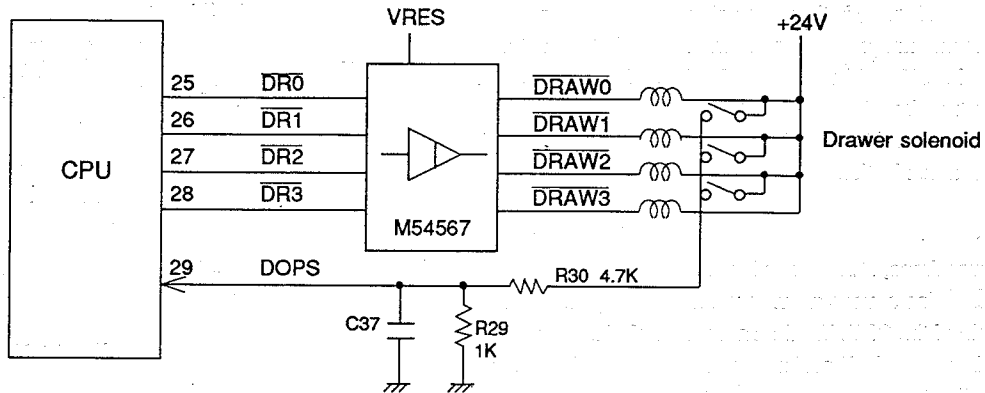


Fig. 12-25

The drawer is directly supported by the CPU. No action starts when the power supply is not steady as the output stage of the driver is pulled by VRES signal.

Drawer open and close is sensed with the microswitch provided in the drawer whose signal is level converted with R30 and R29 and directly read by the CPU. (Note that the drawer open sensor is an option for the standard, ER-3250.)

12-9. Key, display, timer, buzzer controls

The keys, switches, displays, timer/calendar, and buzzer are controlled by the CKDC-III on the display PWB.

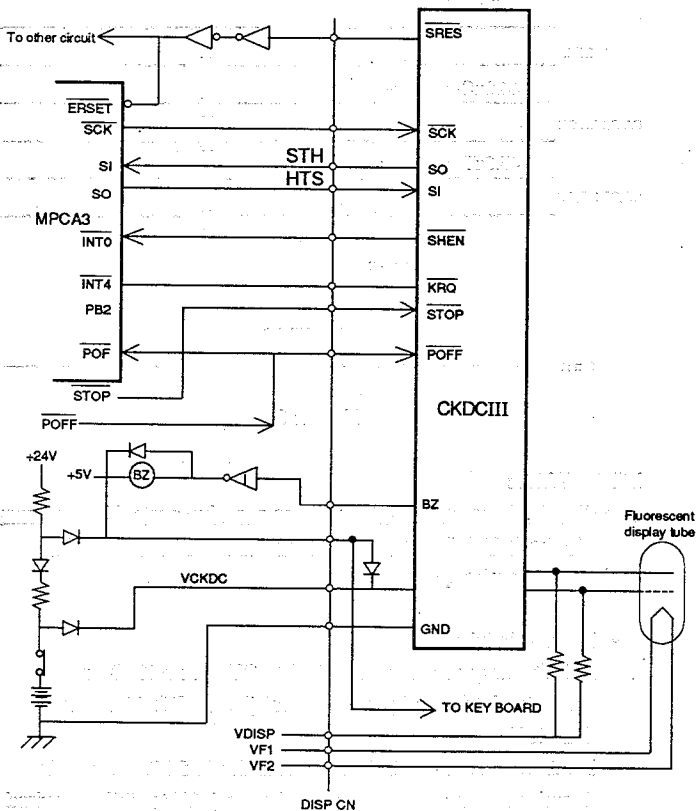


Fig. 12-26 Block diagram

1) Power on/off sequence

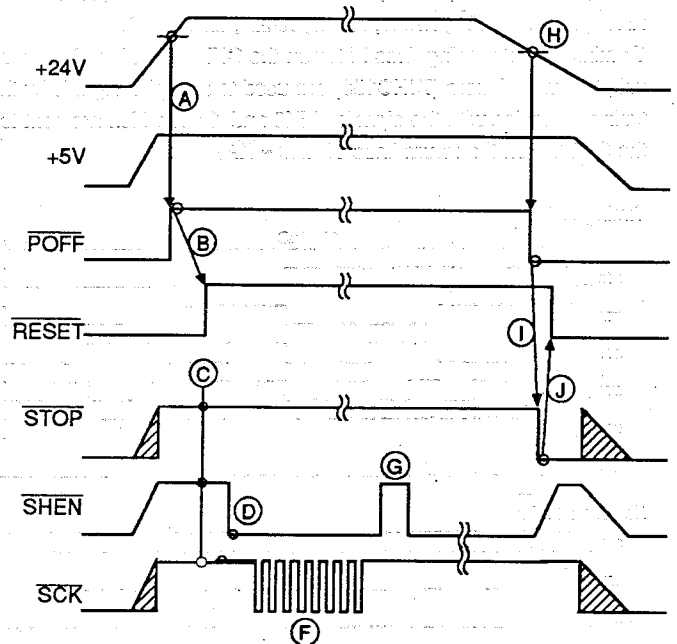


Fig. 12-27

Hatched area indicates logic unstable.

<At power on>

When +24V power rises, the signal $\overline{\text{POFF}}$ is forced high (A), by which time the +5V supply becomes stable. The CKDC-III monitors the state of $\overline{\text{POFF}}$ while updating the timer/calendar in the low power standby mode, and when the high state of $\overline{\text{POFF}}$ is detected, the system reset signal ($\overline{\text{RESET}}$) is set high (B), by which time the output lines $\overline{\text{STOP}}$ and $\overline{\text{SCK}}$ of the CPU and MPCAIII have been initialized to high, respectively (C). Thereafter, the CKDC-III sets $\overline{\text{SHEN}}$ active (low) (D) to notify the CPU of the command/data communication ready state.

One byte data/command can be transferred with eight $\overline{SCK}$ pulses (F). When one byte has been transferred with eight $\overline{SCK}$ pulses, the CKDC-III sets $\overline{SHEN}$ high to initiate internal processing. After completion of the internal processing, when the next byte transfer becomes ready, the CKDC-III sets $\overline{SHEN}$ back to a low state to wait for the next byte transfer (G). Thereafter, the $\overline{SHEN}$ and $\overline{SCK}$ timing described above is repeated to carry on the communication.

<At power off>

When +24V power drops, $\overline{POFF}$ goes low (H). A low on the $\overline{POFF}$ line causes a low level interrupt request which is sent the $\overline{IRQ2}$ pin of the CPU. Within a maximum of 10msec of the low level $\overline{IRQ2}$ input, the CPU performs software processing necessary for power-off, after which the $\overline{STOP}$ output is set low (L). When $\overline{STOP}$ goes low, the CKDC-III sets $\overline{RESET}$ low to reset the whole system (J). And, the +5V supply is held at 4.75V or higher voltage, after which the voltage drops to a level that the logic circuit does not operate.

2) Key and switch scanning

Strobes $ST0 \sim ST3$ are decoded on the keyboard by two 74LS138 3-to-8 decoders to generate 16 strobe signals of $S15 \sim S0$.

The key matrix consists of 16 strobe lines and 16 returns lines of $KR0A, KR1A, KR2A, KR3A, KR0B, KR1B, KR2B, KR3B, KR0C, KR1C, KR2C, KR3C, KR0D, KR1D, KR2D,$ and $KR3D$.

To minimize interfacing lines between the CKDCIII and the keyboard unit, two multiplexers (74HC153) are used to multiplex signals by the timing controlled with the signals $KEX0$ and $KEX1$ which are sent to the CKDCIII on the return lines of $KR0 \sim KR3$.

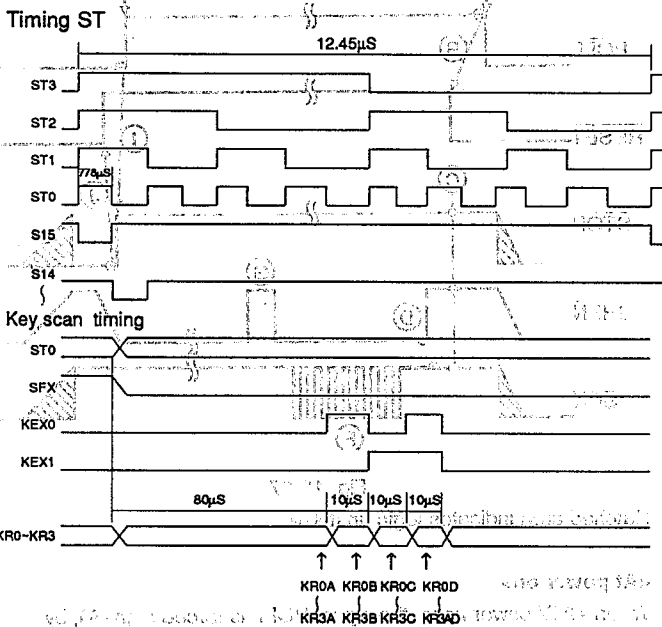


Fig. 12-28

The mode switch is provided with a special return line $\overline{MODR}$; apart from the above return lines. In the same manner, the clerk, paper feed key (J/R), and receipt on/off switches use $\overline{CFSR}$ as the return line.

3) DISPLAY CONTROL

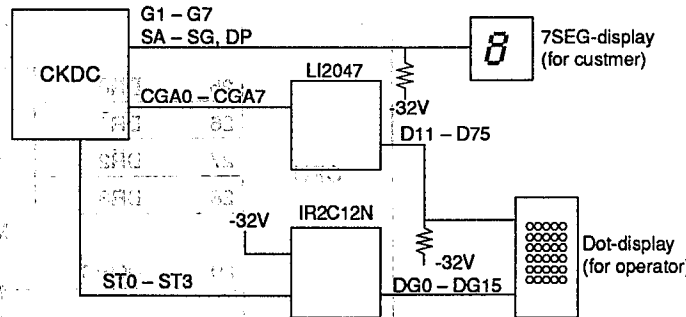


Fig. 12-29

CKDC3 directly drives the 7-segment display unit and the dot display is driven via LI2047.

7 segment drive time chart

The display tube employs a grid blanking dynamic drive and operates in the following timing.

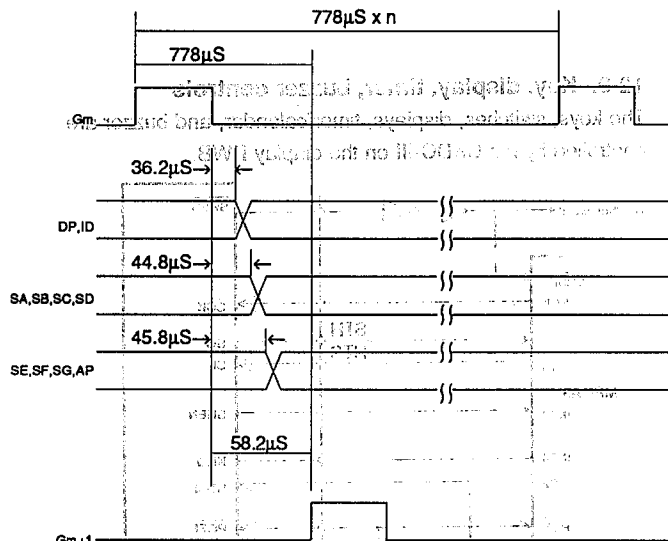


Fig. 12-30

IMPORTANT:

The CKDCIII lines are not high voltage resistive ports. Damage may occur to the CKDCIII if lines are shorted carelessly when using oscilloscope probes.

• Dot matrix tube

A 4-bit binary output signals ($ST0 \sim ST3$) from KDC are converted into the digit drive signal ($DG0 \sim DG15$) into the IR2C12N.

Inputs on $CGA0 \sim CGA6$ are sent to the LI-2047 dot matrix decoder where converted into voltages (+5V to -32V) required for direct driving of the display tube and sent out as $D11 \sim D75$.

4) Dot matrix decoder (LI-2047)

The LI-2047 is a 5 X 7 dot matrix decoder which generates 126 numerical, alphabetical, and symbolic display characters.

This decoder is capable of directly driving the fluorescent display tube.

Dot input vs. dot output

a) When the chip enable inputs ($\overline{CE1}$ and $\overline{DE2}$) are at a low level, dot select output signals (D11 - D75) are generated.

Dot select output are determined by the input (CGA0 - CGA6).

b) When chip enable input $\overline{CE1}$ is at a high level, no dot output are generated.

c) Voltage level

Input (CGA0 - CGA6)

High: +5V

Low: GND

Output (S11 - D75)

High: +5V

Low: -31V

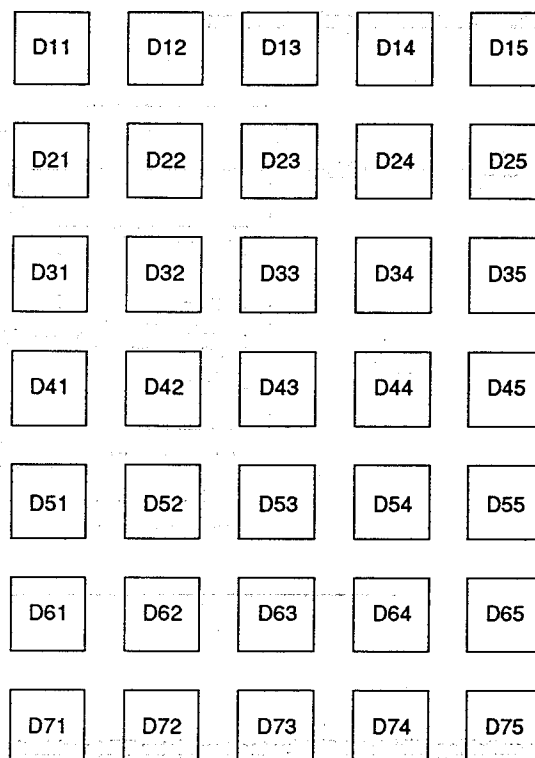


Fig. 12-31

12-10. Power supply circuit

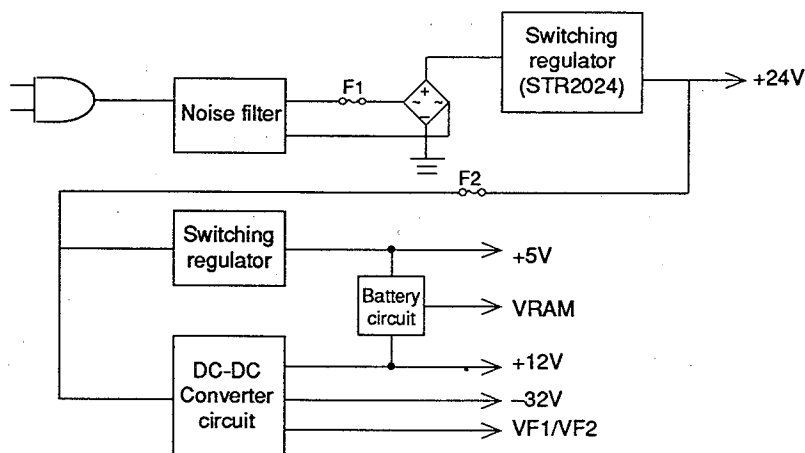


Fig. 12-32

+24V:	Printer, solenoid power
+5V:	VCC (Logic power)
+12V:	Battery charge, IN-LINE driver power
-32V:	Display tube power
VF1, VF2:	Display tube power (AC)
VRAM:	Battery back-up power

For the DC-DC converter, refer to section 8 of cash register Basic manual.

12-11. Switching regulator circuit

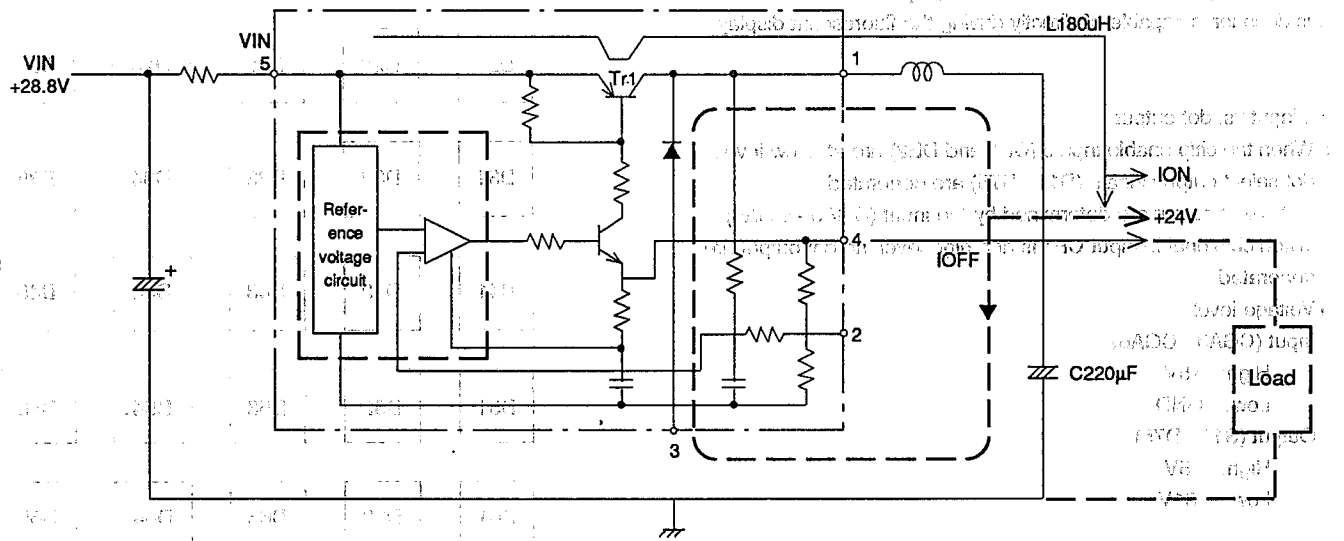
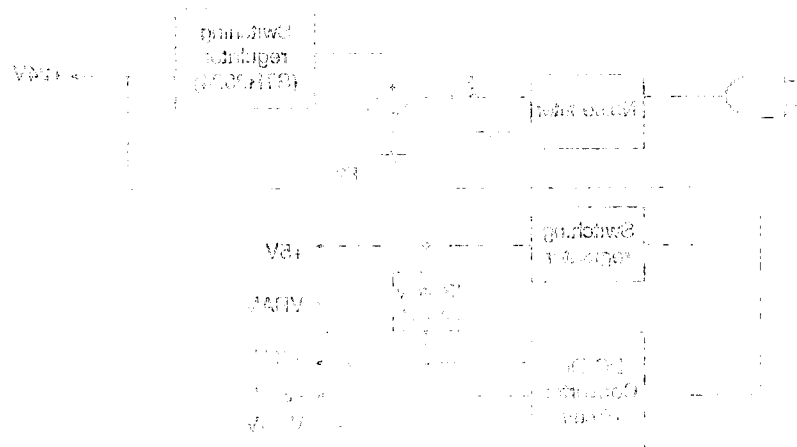


Fig. 12-33

By switching VIN (+28.8V) by the transistor TR1 within the STR2024, DC+24V supply is obtained through the LC network. Stable +24V is obtained by controlling on/off duty of TR1.

ION: Current when TR1 is on.

IOFF: Current when TR is off.



13. SERVICE OPTION INSTALLATION PROCEDURE

13-1. Validation sensor (DKIT-8227RCZZ)

Component parts:

DUNTK8224RCZZ: Sensor unit, with connector and screws

VRD-RC2EY163J: 16kΩ resistor (R81)

Installation:

1. Saving data (Refer to section 6.)

If there is no need of saving the data, you may proceed to a next step without executing this step.

The contents of the memory of the ER-3250 to be installed with the option, must be saved in the data saving unit consisting of the ER-3250 and ER-01FD, using the cable (QCNW-6952RCZZ).

1-1. Getting the receiving ER-3250/01FD, ready for operation

ER-3250

Clear the memory of the receiving ER-3250 by master reset (MRS-1).

ER-01FD

Set the dip switch to the ER-3250 mode. Also, set the baud rate.

EX. 9600BPS

DS1								DS2			
1	2	3	4	5	6	7	8	1	2	3	4
OFF	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF

1-2. Connecting the cable

Fasten the cable (QCNW-6952RCZZ) to the SIO connector located on the left side of the data saving ER-3250 to be installed with the option unit.

1-3. Setting the receiving ER-3250 in the data receive mode

Set the mode switch of the receiving ER-3250 to the SRV position and type the following command:

998 → [•] → [@/FOR] → [CA/AT]

With this, the machine is set in the SIO receive mode.

No action is required for the ER-01FD as it incorporates the automatic start feature.

1-4. Setting the transmitting ER-3250 in the data transmit mode

Set the mode switch of the transmitting ER-3250 to the SRV position and type the following command:

996 → [•] → [@/FOR] → [CA/AT]

With this, data transfer takes place.

2. Removing the top cabinet (Fig. 13-1)

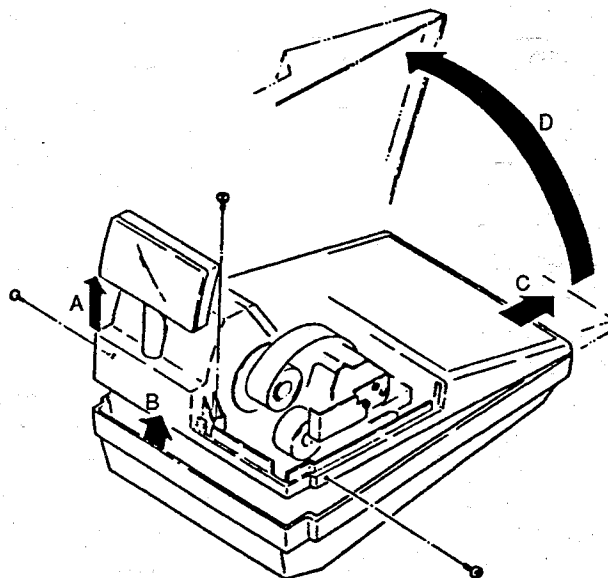


Fig. 13-1

2-1. Unplug the AC cord from the wall outlet.

2-2. Lift up the customer side popup display in the arrow direction A.

2-3. Remove the screws on both sides of the machine.

Remove the printer cover.

Remove one screw on the back of the machine.

2-4. Lift up the top cabinet from the rear and remove the top cabinet. (See arrowheads, B, C, and D.)

3. Removing the main PWB

Unfasten the 2-pin power supply connector, 13-pin display connector, two printer connector (printer side), the SIO connector, and GND wire. Remove the screw that hold the main PWB in place.

Unlatch main PWB holding tabs *three) and carefully remove the main PWB from the chassis. Unfasten the drawer connector while holding up the main PWB.

4. Installing parts on the main PWB

Install and solder the 3-pin connector, and R81 16kΩ (VRD-RC2EY163J) on the main PWB, in reference to Fig. 13-2:

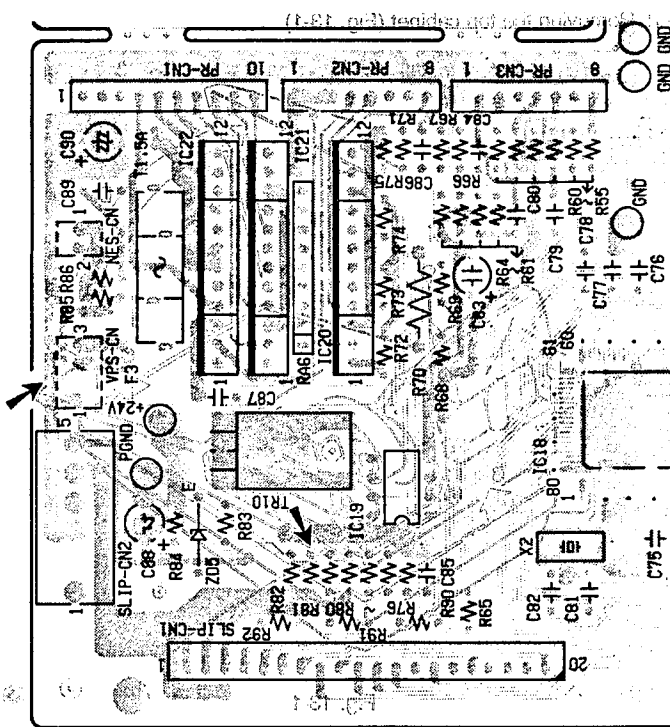
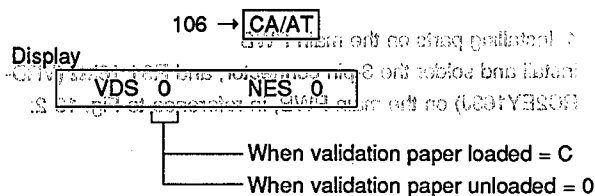


Fig. 13-2

5. Installing the sensor unit
Install the sensor unit in the M2640 printer, in reference to page 21 in M2640 Service Manual (00ZM2640SM/-E).
6. Reassembling
Replace connector and other parts in the reverse sequence.
7. Restoring the data
Load the data from the ER-3250 in which the data was saved.
8. Operation check
Executes the JOB#106 of the test function.



13-2. Near end sensor (DKIT-8226RCZZ)

Component parts:

DUNTK8296RCZZ: Near end sensor unit, with connector and screws

Installation:

1. Protecting data

If there is no need of saving the data, you may proceed to a next step without executing this step.

The contents of the memory of the ER-3250 to be installed with the option must be saved in the data saving unit consisting of the ER-3250 and ER-01/02FD, using the cable (QCNW-6952RCZZ).

13-2. Removing the cabinet

Remove the cabinet in reference to 13-1.

3. Removing the main PWB

Remove the main PWB in reference to 13-1.

4. Installing parts on main PWB

Install and solder the 2-pin connector on the main PWB (Fig. 13-3).

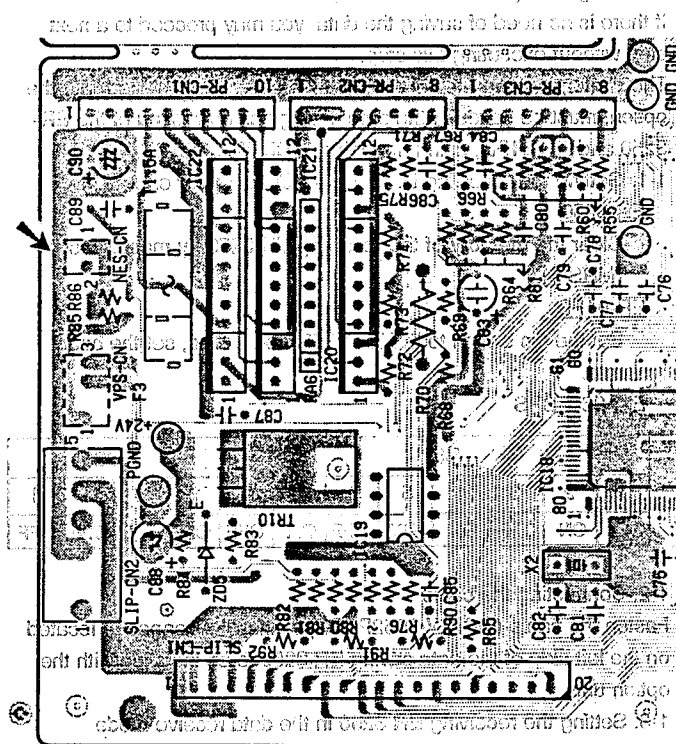


Fig. 13-3

5. Installing the sensor unit (Fig. 13-4)

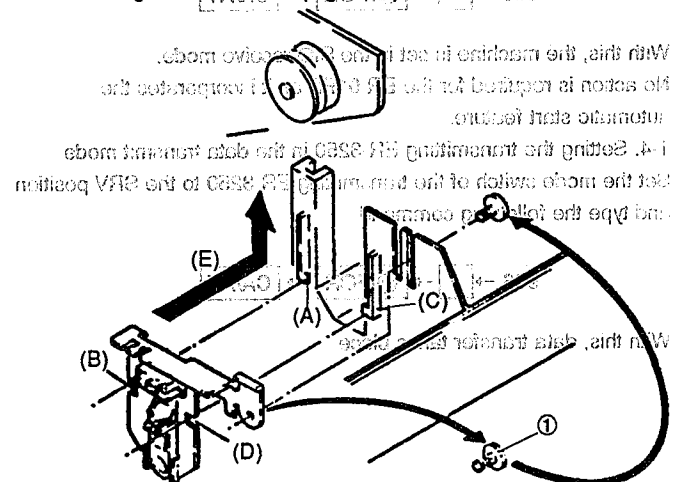


Fig. 13-4

Remove the sensor unit adjusting screw.

Match the journal guides (A) and (C) to points (B) and (D) of the sensor unit, and install the sensor unit in the arrow direction (E). Then, secure it with the adjusting screw ①.

6. Fasten the connector removed at 4) with the connector from the sensor unit.

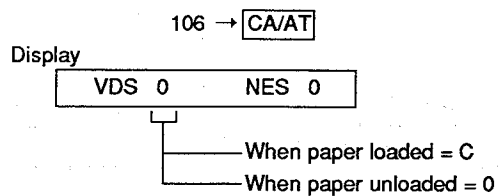
7. Replace the main PWB and the cabinet.

8. Restoring the data

Load the data saved from the ER-3250 in which the data was saved.

9. Operation check

Excutes the JOB#106 of the test function.



Adjustment:

Loosen the adjusting screw and adjus the position of the sensor unit.

13-3. Waterproof printer cover (DKIT-3390RCZZ)

Component parts:

GCOVH6884RCZZ: Waterproof printer cover

GDAI-6658RCSA: Bracket

XUPSD30P12000: Screw, M3 x 12, 3 pcs

XWHSD40-08100: Washer, 3 pcs

HBDGD6873RCZZ: Logo plate

Installation: (Fig. 13-5)

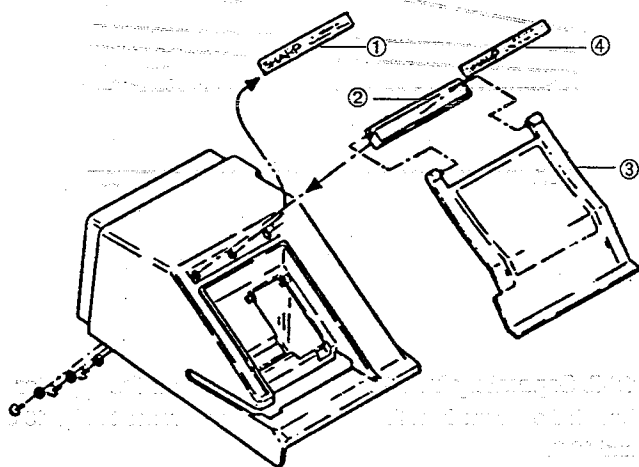


Fig. 13-5

1. Remove the printer cover.

2. Remove the logo plate ① from the printer cover.

3. Install the bracket ② and waterproof printer cover ③.

4. Install on the printer cover the components assembled in 3) above and secure it with screws and washers from the back of the printer cover.

5. Attach the logo plate ④ (ER-3250: HBDGD6873RCZZ). The logo plate is contained in the package.

13-4 Changing drawer position

It is possible for the ER-3250 to change drawer position.

It had been factory installed that the back of the ER-3250 extends beyond the drawer. (Fig. 13-6)

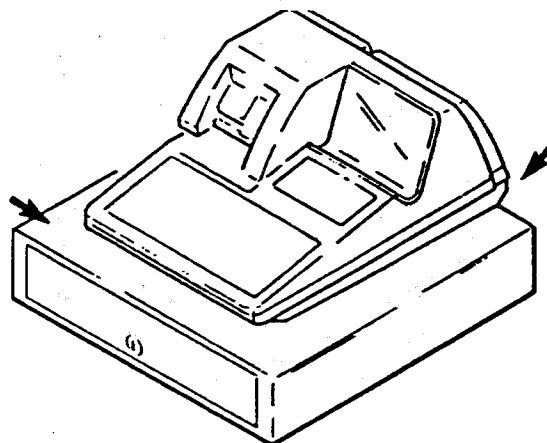


Fig. 13-6

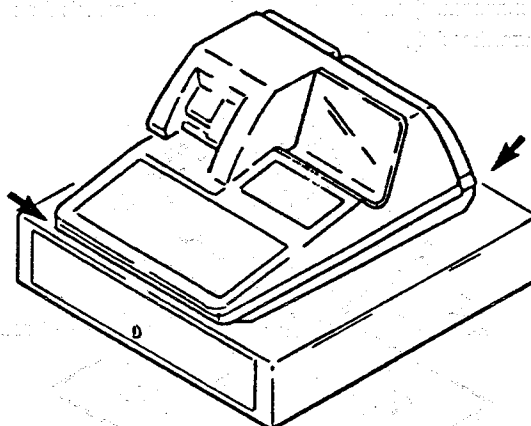


Fig. 13-7

1. Remove two screws from the bottom of the drawer (Fig. 13-8).

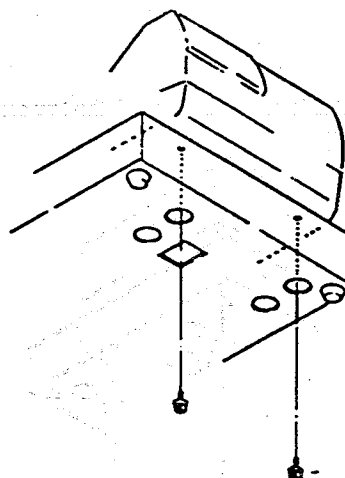


Fig. 13-8

2. Move the cash register towards the front (arrowhead a) and lift it up (arrowhead b).

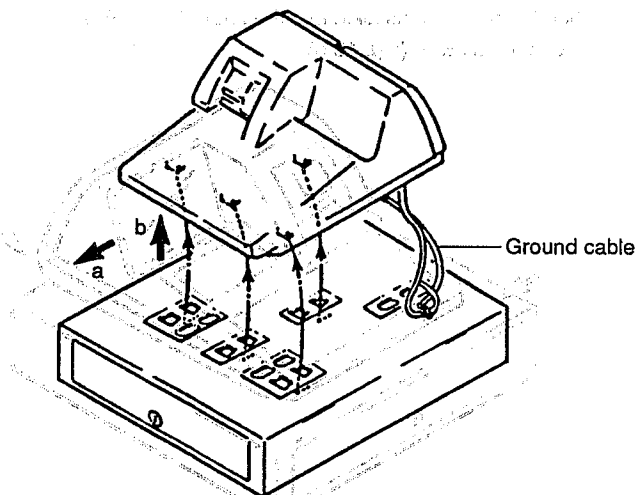


Fig. 13-9

3. Insert studs under the bottom plate in the holes of the drawer (arrowhead c) and move the cash register towards the rear (arrowhead d).

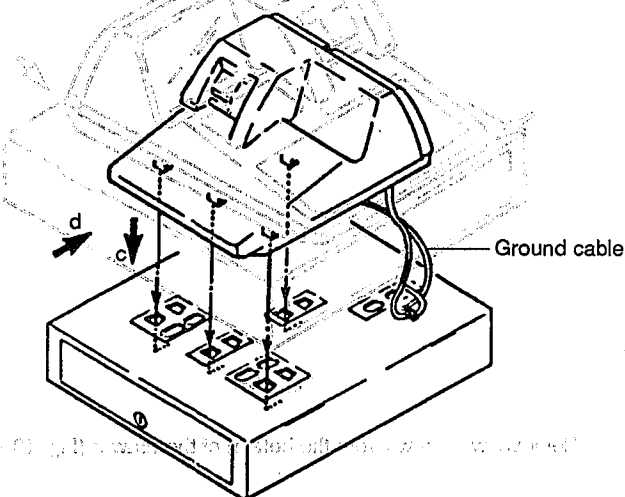


Fig. 13-10

4. Secure the front side of the drawer with the two screws removed at 1). (Fig. 13-11)

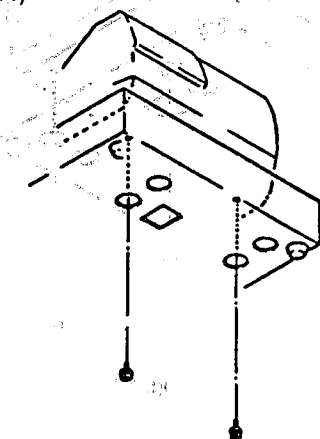


Fig. 13-11

5. With this, the dept changes from 507mm to 467mm which become 40mm shorter (Figs. 13-12 and 13-13).

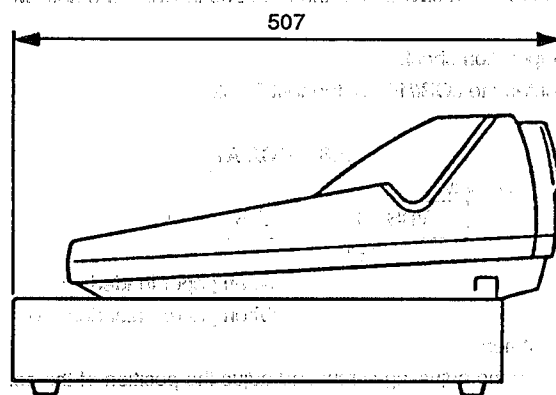


Fig. 13-12

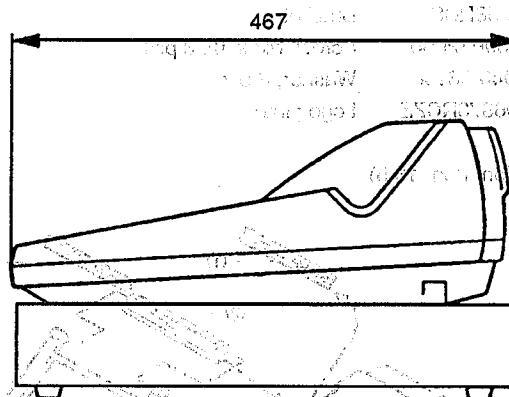


Fig. 13-13

13-5. Separately installing the drawer from the register

Detach the drawer from the cash register in reference to Figs.13-8 and 13-9.

To install the register separately from the drawer, the ground cables in Figs. 13-9 and 13-10 must be removed. The ER-01DW etc., may be used as a separate drawer. If the drawer of the register is to be used, the drawer cable must be replaced by the 5m long cable (QCNW-2772RCZZ) because the standard cable may not be long enough.

This extension cable is a 3-wire cable, connecting as following; (You can use the drawer cable option only if the standard cable dose not have a sufficient distance when connecting with the standard or option drawer.)

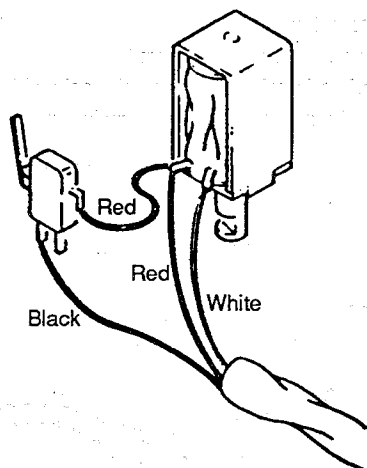


Fig. 13-14

The 3-pin side of the QCNW-2772RCZZ connector must be connected to the drawer connector of the ER-3250. Remove from the bottom cabinet the plastic cover @ under the drawer connection slot use it for a strain relief.

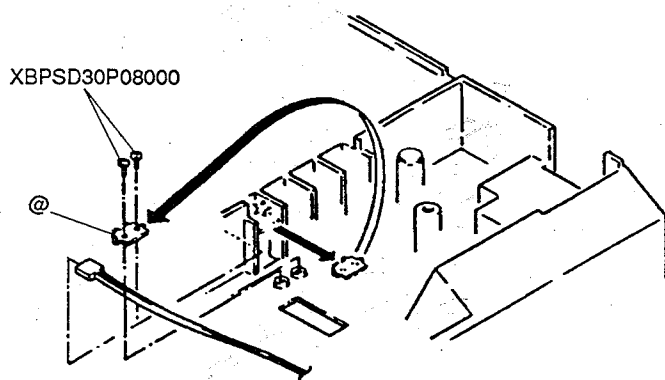


Fig. 13-15

Two rubber footing (GLEGG1019CCZZ) must be installed under the bottom cabinet to hold the register stable.

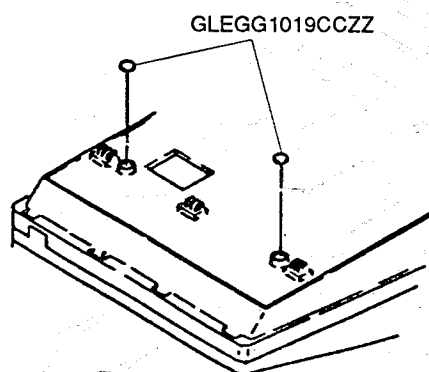


Fig. 13-16

13-6. Drawer fixing kit

The drawer fixing kit is used for securing the cash drawer when installing separately from the ECR main unit.

By using two of brackets, the drawer box can be protected from drifting especially when it is filled with coins.

1) Parts list

KIT CODE: DKIT-8633RCZZ

No.	Parts code	Description	Price rank	Q'ty
1	LBRC-2321RCZZ	Fixing bracket	AN	2
2	XTPSD40P16000	Tapping screw M4x16	AA	4
3	XBSSD40P16000	Flat head screw M4x16 (For remote drawer)	AA	2
4	XUSSD40P20000	Flat head screw M4x20 (For standard drawer)	AA	2
5	XBPSD40P22000	Screw M4x22	AA	4
6	XNESD40-32000	NUT M4x32	AA	4

2) Installation procedure

- Turn over the drawer bottom side and remove rubber footing at tow locations.
 - Fasten the bracket together with the rubber footing using the pan head screw.
- Pay attention for the installing direction of the bracket that the pan head screw can be inserted properly into the bracket.

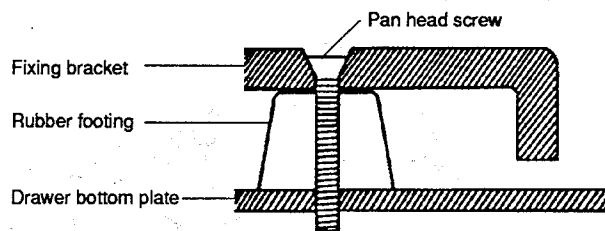
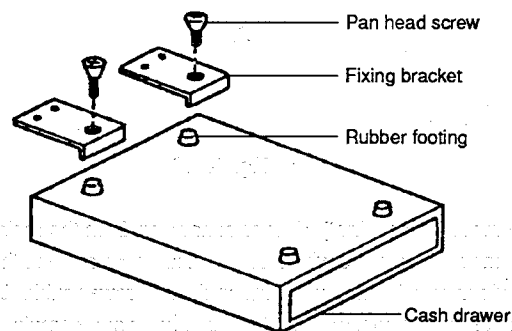


Fig. 13-17

③ Fastening on the table:

Secure the fixing Bracket using the screw (Fig. 13-18).
If the thickness of the table is less than 15mm, bore a 4.5mm hole in the table and fasten it with the screw (XBPSD40P22000 - 4pcs.) and nut (XNESD40-32000 - 4 pcs.)

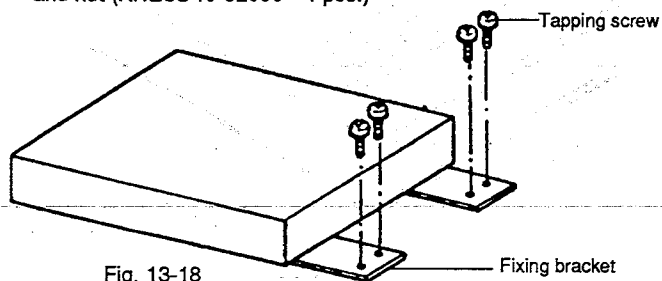


Fig. 13-18

13-7. Drawer open sensor (DKIT-8331RCZZ)

Component parts: 1 pc DUNT-8332RCZZ: 1 pc
 QSW-M6797RCZZ: Microswitch, 1 pc
 PSHEP6635RCZZ: Spacer, 1 pc
 QCNCW6925RCZZ: Wired connector for solenoid, 1 pc
 QCNW-6637RCZZ: Microswitch leads, 1 set
 LX-BZ6728RCZZ: Screw, M3 x 14, 2 pcs

Installation:

- 1) Remove two screws in the drawer bottom plate and separate the drawer from the main body.

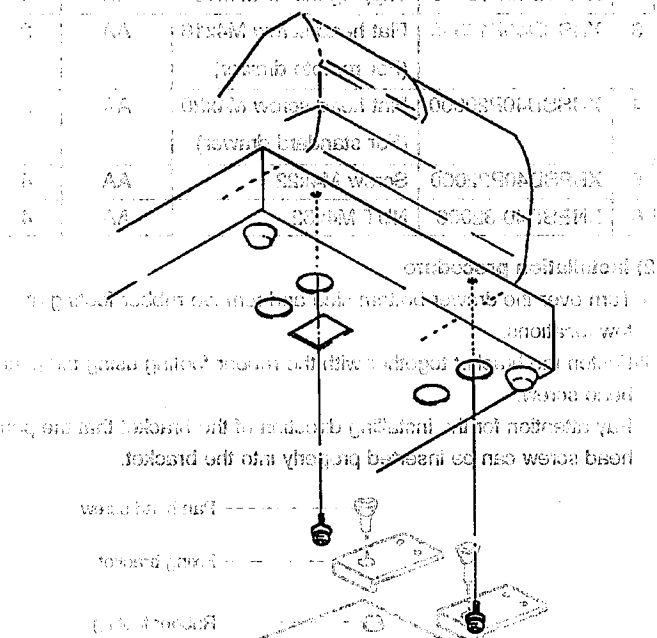


Fig. 13-19

- 2) Remove the cabinet, drawer connector, from the main PWB.
- 3) Remove the ground wire found on the upper side of the drawer and remove the clamp ① that holds the drawer cable. Unfasten the drawer connector from the main body and completely isolate the drawer from the main body.

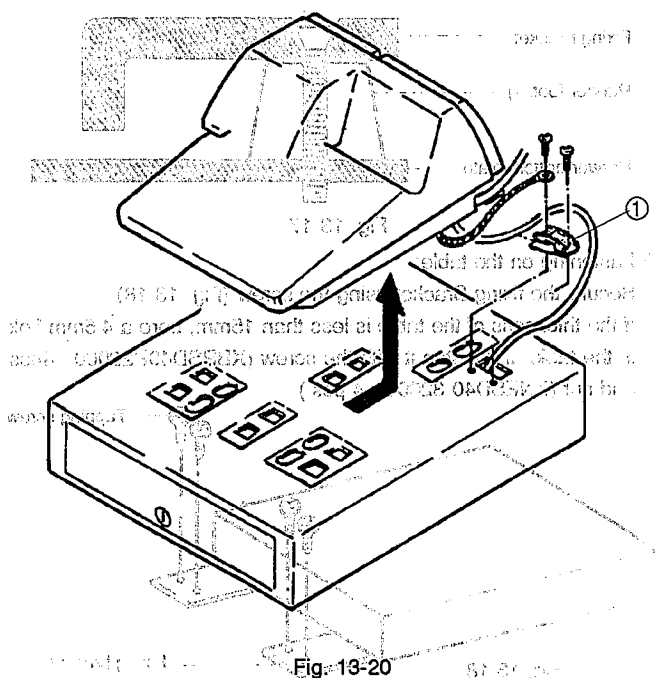


Fig. 13-20

- 4) Remove the drawer bottom plate.
- 5) Remove two nuts and remove the lock unit.
- 6) Unsolder a red lead and a white lead from the solenoid.
- 7) Solder the leads to the microswitch as shown in the Fig. 13-21.

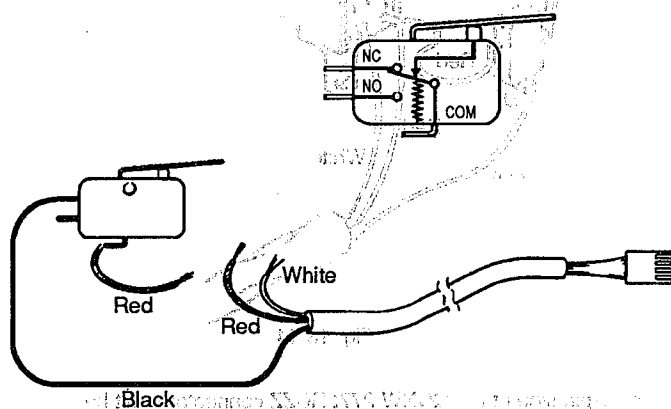


Fig. 13-21

- 8) Solder the reset of leads to the solenoid as shown in the Fig. 13-22

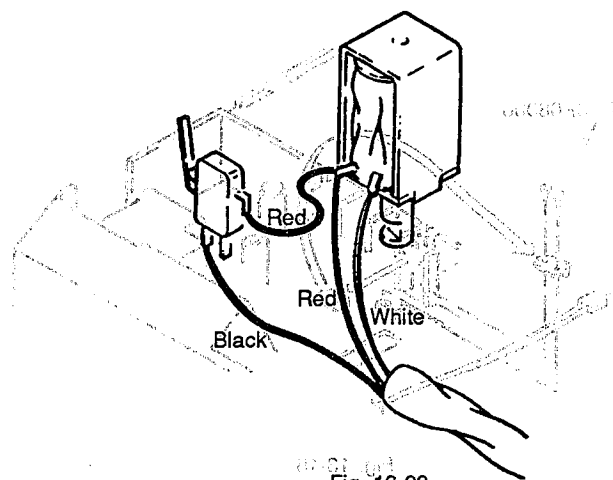


Fig. 13-22

- 9) Install the microswitch on the lock unit as shown in the Fig. 13-23.

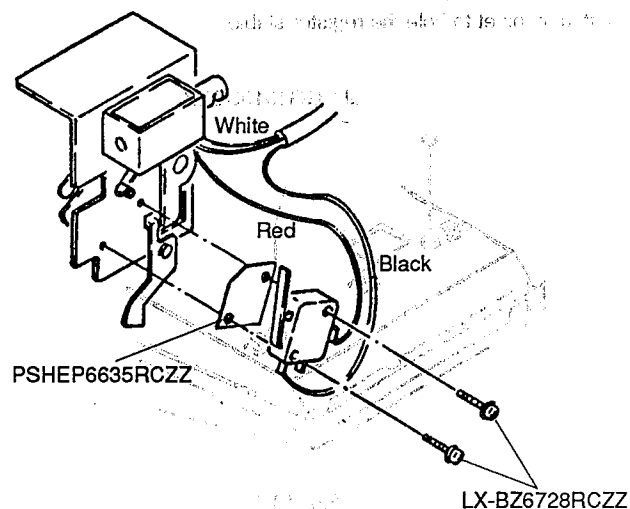


Fig. 13-23

- 10) Install the lock unit in the drawer.

- 11) Secure the drawer connector with the clamp on the drawer upper side. At the same time, hold the ground wire with the clamp together.
- 12) Rout the drawer connector through the bottom cabinet and install it on the main PWB.
- 13) (Replace the cabinet.)
- 14) Install the drawer to the main body using the screw saved.
- 15) Operation check

Excutes the JOB#110~113 of the test function.

110~#113 → CA/AT

Display

0

When drawer open = *0*

When drawer close = *C*

Service programming:

Excute JOB#913-D in the SRV mode and enter one of numbers, 4, 5, 6, 7.

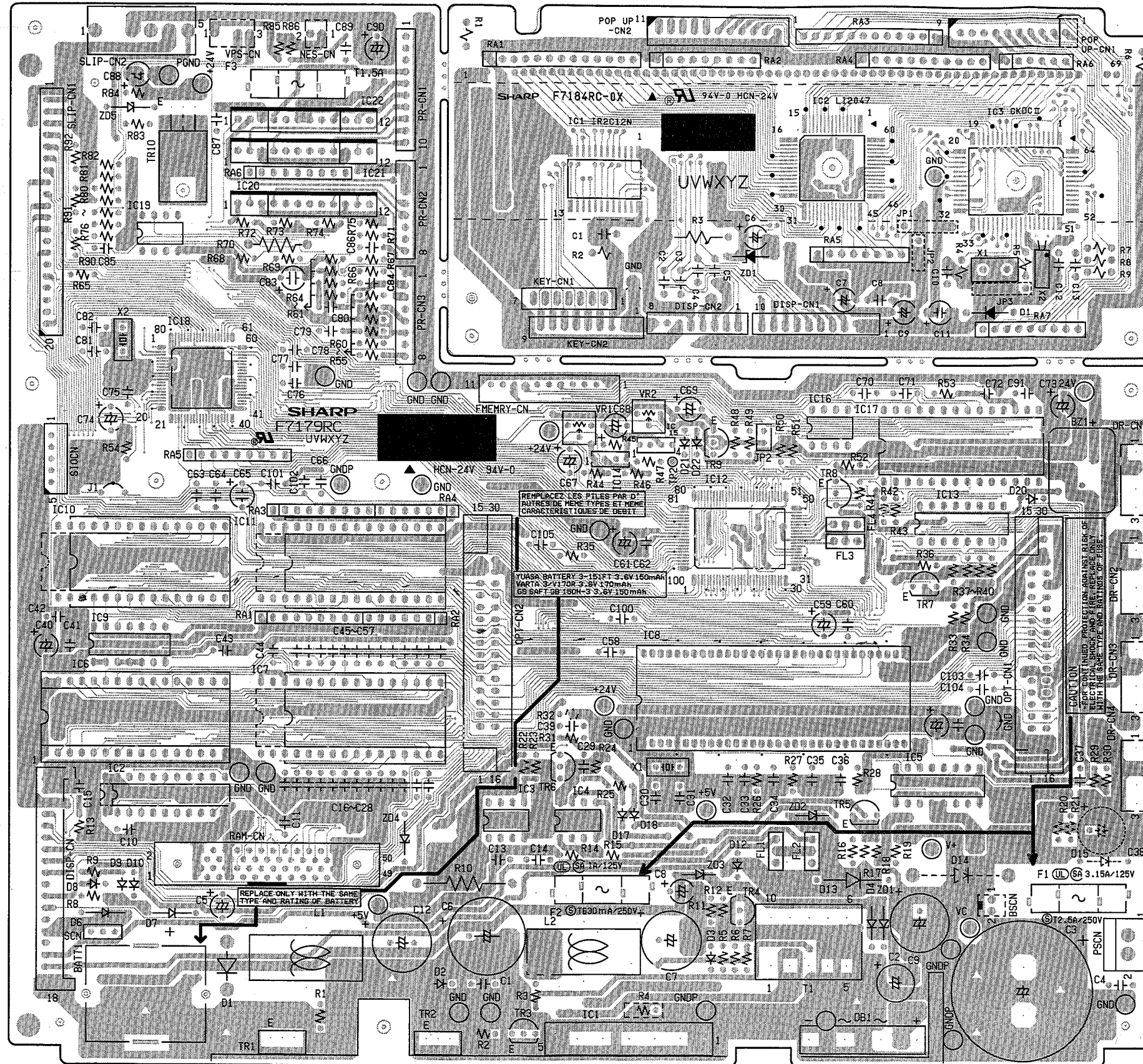
913 → • → @/FOR → A, B, C, D → CA/AT

BLANK
PAGE

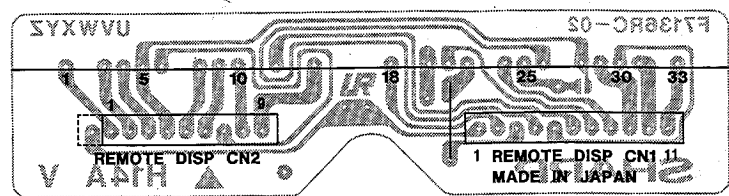
14-1. Main PWB and Display PWB layout

243

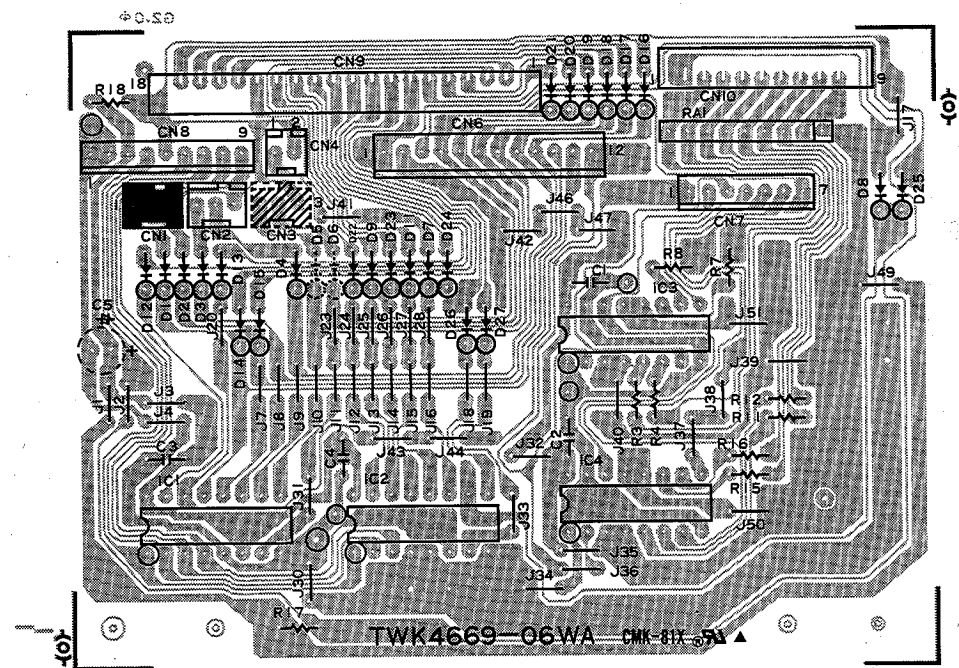
22



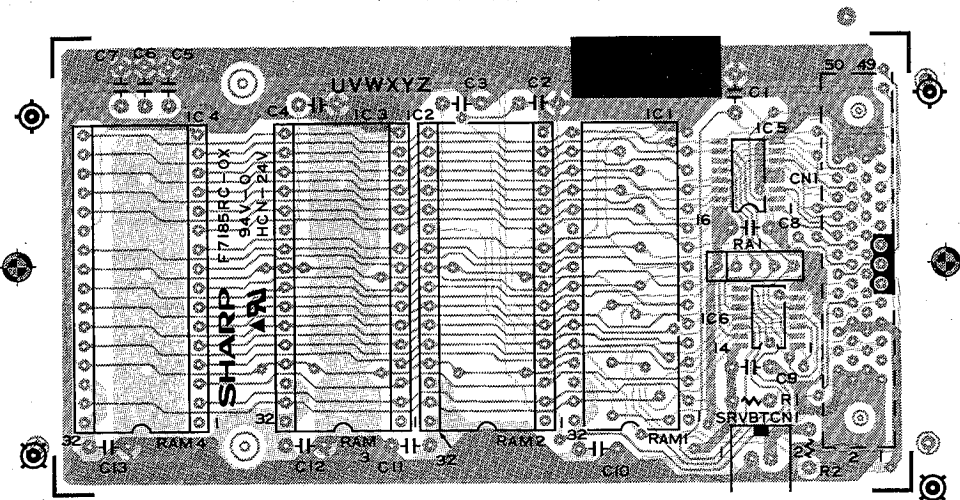
14-2. Pop-up display PWB layout



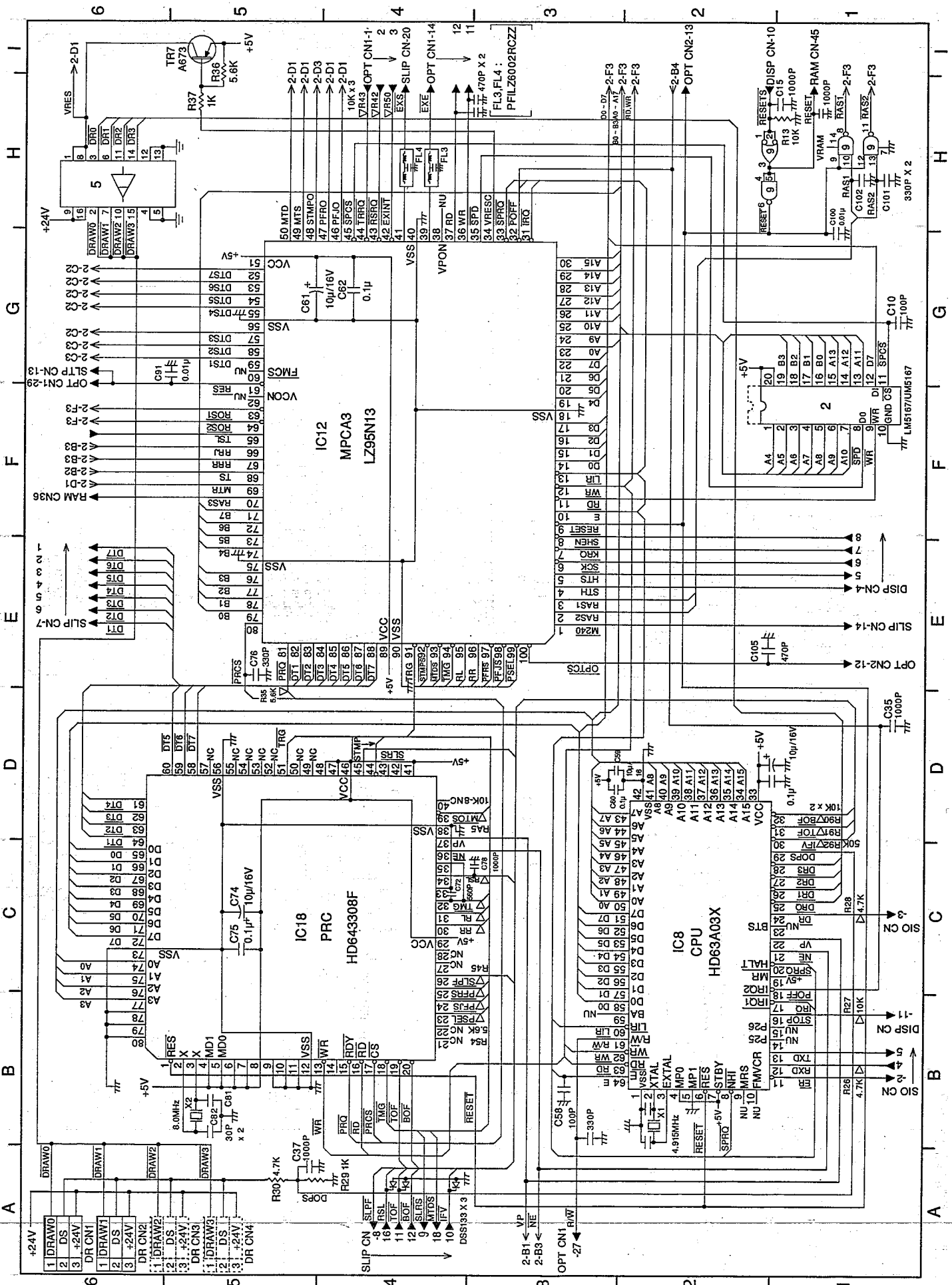
14-3. Key I/F PWB layout



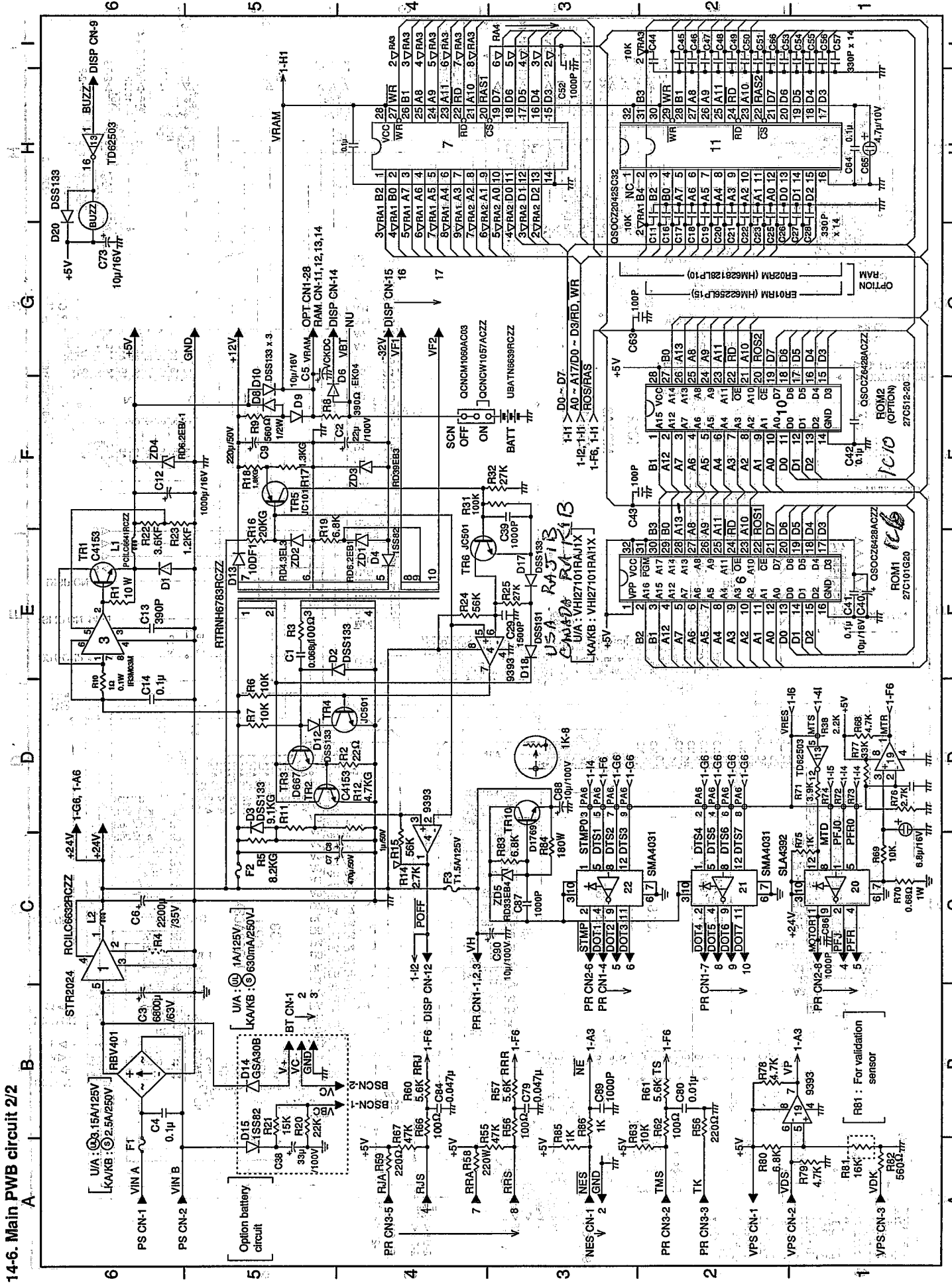
14-4. ER-01 MB PWB layout

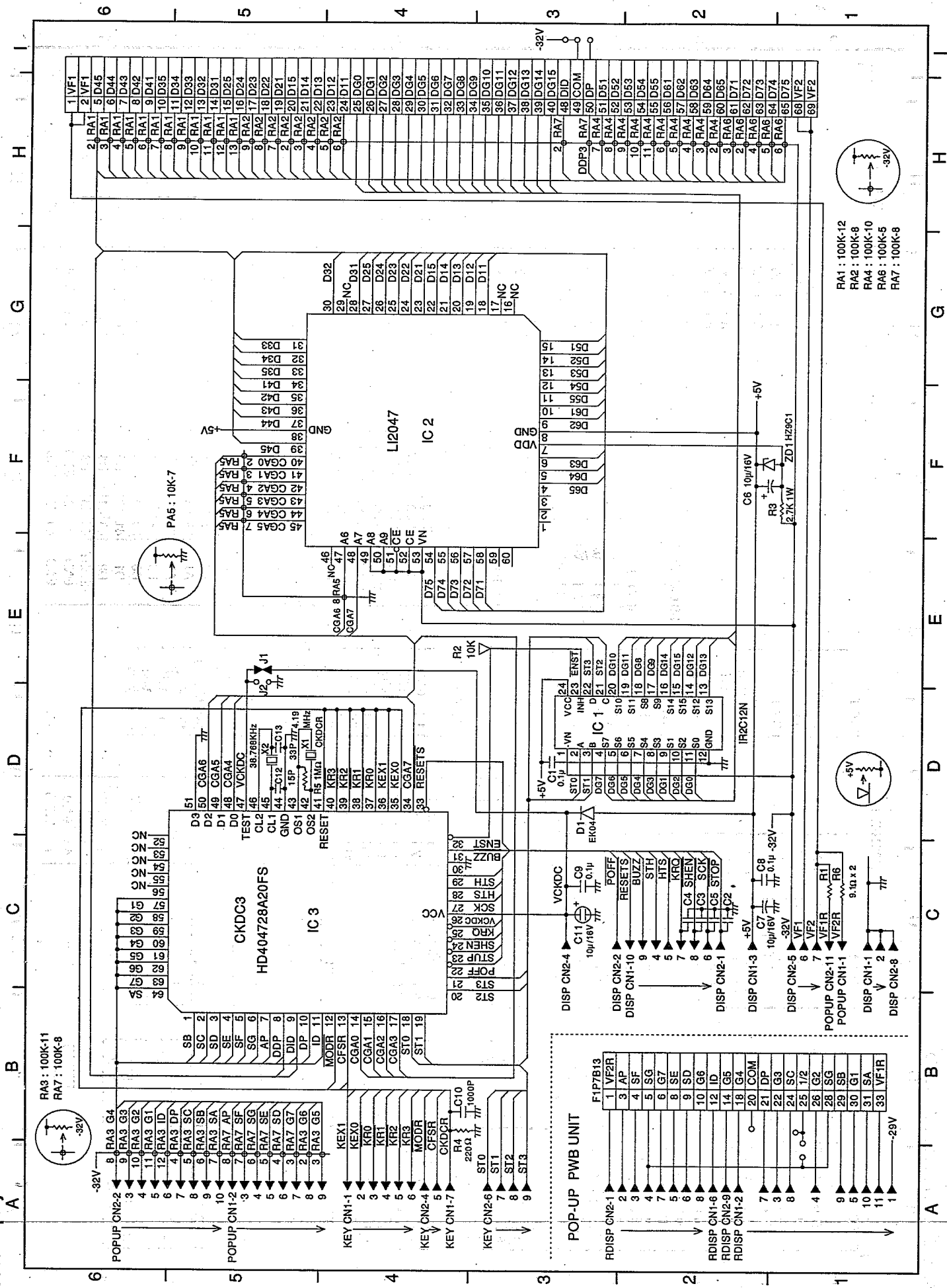


14-5. Main PWB circuit 1/2



14-6. Main PWB circuit 2/2





14-8. Main PWB connector table

MAIN PWB

DISPLAY UNIT

OPT CN1

		15	30	GND
GND		14	29	RES
EXE		13	28	VRAM
POFF		12	27	RW
RD		11	26	NC
WR		10	25	D7
D6		9	24	D5
D4		8	23	D3
D2		7	22	D1
+12V		6	21	NC
NC		5	20	NC
NC		4	19	NC
EXINT		3	18	NC
RSRQ		2	17	NC
TRRQ		1	16	NC

PR CN1

1	VH
2	VH
3	VH
4	DOT1
5	DOT2
6	DOT3
7	DOT4
8	DOT5
9	DOT6
10	DOT7

PR CN2

1	+24V
2	+24V
3	+24V
4	PFJ
5	PFR
6	STMP
7	
8	MOTOR

PR CN3

1	GND
2	TMS
3	TK
4	RJS
5	RJA
6	+5V
7	RRA
8	RRS

SLIP CN1

1	DT7
2	DT6
3	DT5
4	DT4
5	DT3
6	DT2
7	DT1
8	SLFS
9	SLRS
10	IFV
11	TOF
12	BOF
13	RES
14	M240
15	TSL
16	RSL
17	NC
18	MTDS
19	TRG
20	EXS

SIO CN

1	GND
2	ER
3	DR
4	RXD
5	TXD

BS CN/BT CN : KA,KB,E

BT CN

1	V+
2	VC
3	GNDP

OPT CN2

	15	30	+5V	
GND		14	29	+5V
RESET		13	28	NC
OPTCS		12	27	A4
GNDP		11	26	A5
GNDP		10	25	A6
A13		9	24	A1
A10		8	23	A2
A9		7	22	A3
A7		6	21	A11
A12		5	20	NC
A8		4	19	NC
NU		3	18	NC
NC		2	17	A0
+24V		1	16	+24V

PS CN

1	VINA
2	VINB

BS CN

1	VBC
2	VC

RAM CN

GND	1	2	GND
GND	3	4	GND
+5V	5	6	+5V
+5V	7	8	+5V
VRAM	9	10	VRAM
VRAM	11	12	VRAM
VRAM	13	14	VRAM
B4	15	16	B3
B2	17	18	WR
B0	19	20	B1
A7	21	22	A8
A6	23	24	A9
A5	25	26	A11
A4	27	28	RD
A3	29	30	A10
A2	31	32	B5
A1	33	34	B7
A0	35	36	RAS3
B6	37	38	D7
D0	39	40	D6
D1	41	42	D5
D2	43	44	D4
RESET	45	46	D3
GND	47	48	GND
GND	49	50	GND

DISP CN

1	GND
2	GND
3	+5V
4	STH
5	HTS
6	SCK
7	KRQ
8	SHEN
9	BUZZ
10	RESETS
11	STOP
12	POFF
13	GND
14	VCKDC
15	-32V
16	VF1
17	VF2
18	GND

SLIP CN2

1	+24V
2	GNDP
3	+5V
4	GND
5	VRES

NES CN

1	NES
2	GND

VPS CN

1	+5V
2	VDS
3	VDK

DR CN2

1	DRAW1
2	DS
3	+24V

DR CN1

1	DRAW0
2	DS
3	+24V

DR CN4

1	DRAW3
2	DS
3	+24V

DR CN3

1	DRAW2
2	DS
3	+24V

DISP CN2

1	STOP
2	POFF
3	GND
4	VCKDC
5	-32V
6	VF1
7	VF2
8	GND

DISP CN1

1	GND
2	GND
3	+5V
4	STH
5	MTS
6	SCK
7	KRQ
8	SHEN
9	BUZZ
10	RESETS

POPUP-CN1

1	G4
2	G3
3	G2
4	G1
5	ID
6	DP
7	SC
8	SB
9	SA

POPUP-CN2

1	AP
2	SF
3	SG
4	SE
5	SD
6	G7
7	G6
8	G5
9	GND
10	GND
11	GND

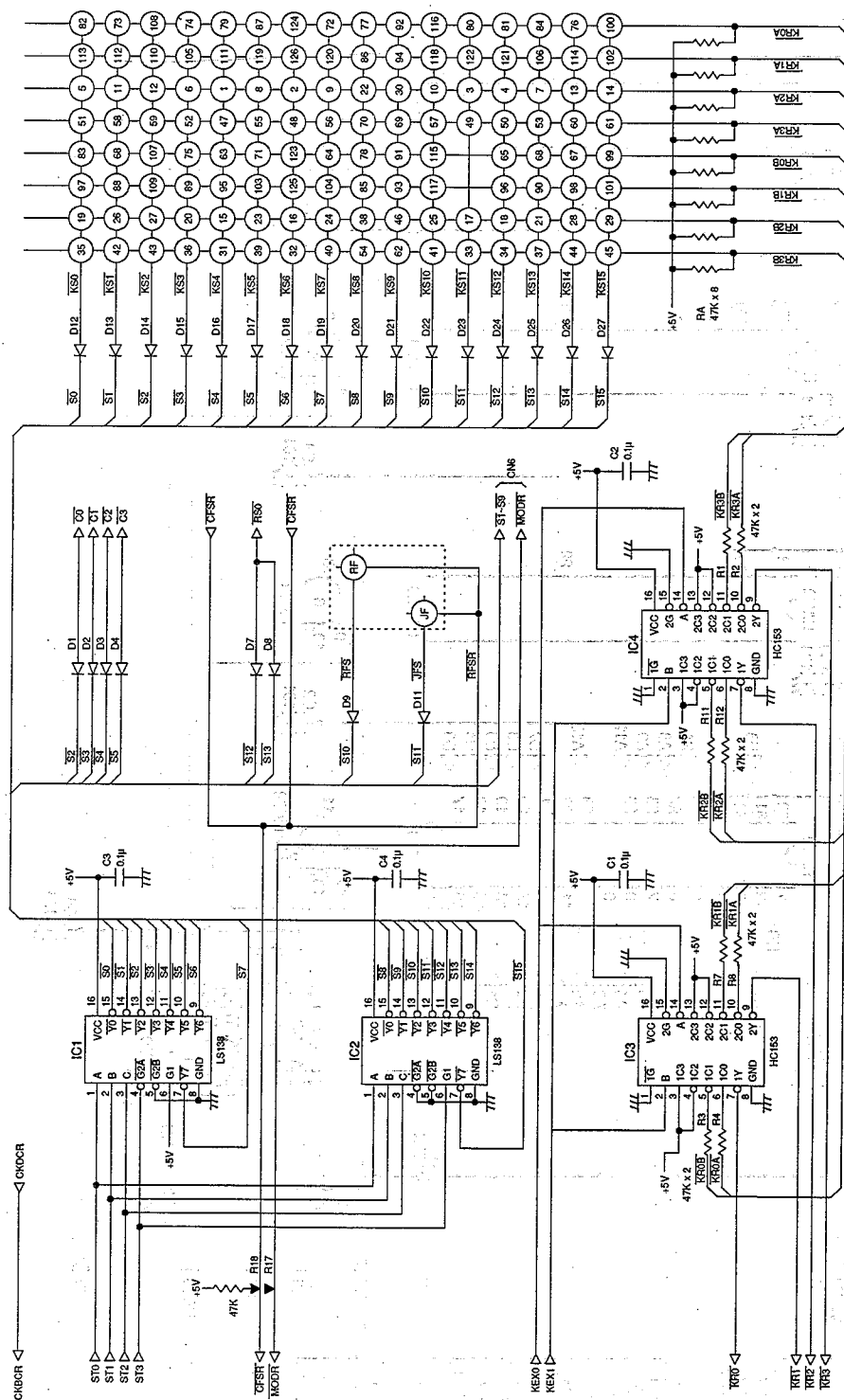
KEY CN1

1	KEX1
2	KEX0
3	KR0
4	KR1
5	KR2
6	KR3
7	CKDCR

KEY CN2

1	GND
2	GND
3	+5V
4	MODR
5	CFSR
6	ST0
7	ST1
8	ST2
9	ST3

14-9. Keyboard circuit



Disp-key CN1	CN7
1	KEX1
2	KEX0
3	<u>KR0</u>
4	<u>KR1</u>
5	<u>KR2</u>
6	<u>KR3</u>
7	CKDCR

Disp-key CN2	CN8	
	1	GND
	2	GND
	3	+5V
	4	<u>MODR</u>
	5	<u>CFSR</u>
	6	ST0
	7	ST1
	8	ST2
	9	ST3

MODE CN	CN6											
	1	2	3	4	5	6	7	8	9	10	11	12
	MODR	+5V	CKDCR	S9	S8	S7	S6	S5	S4	S3	S2	S1

RECEIPT CN	CN4	
1	RSO	
2	CFSR	

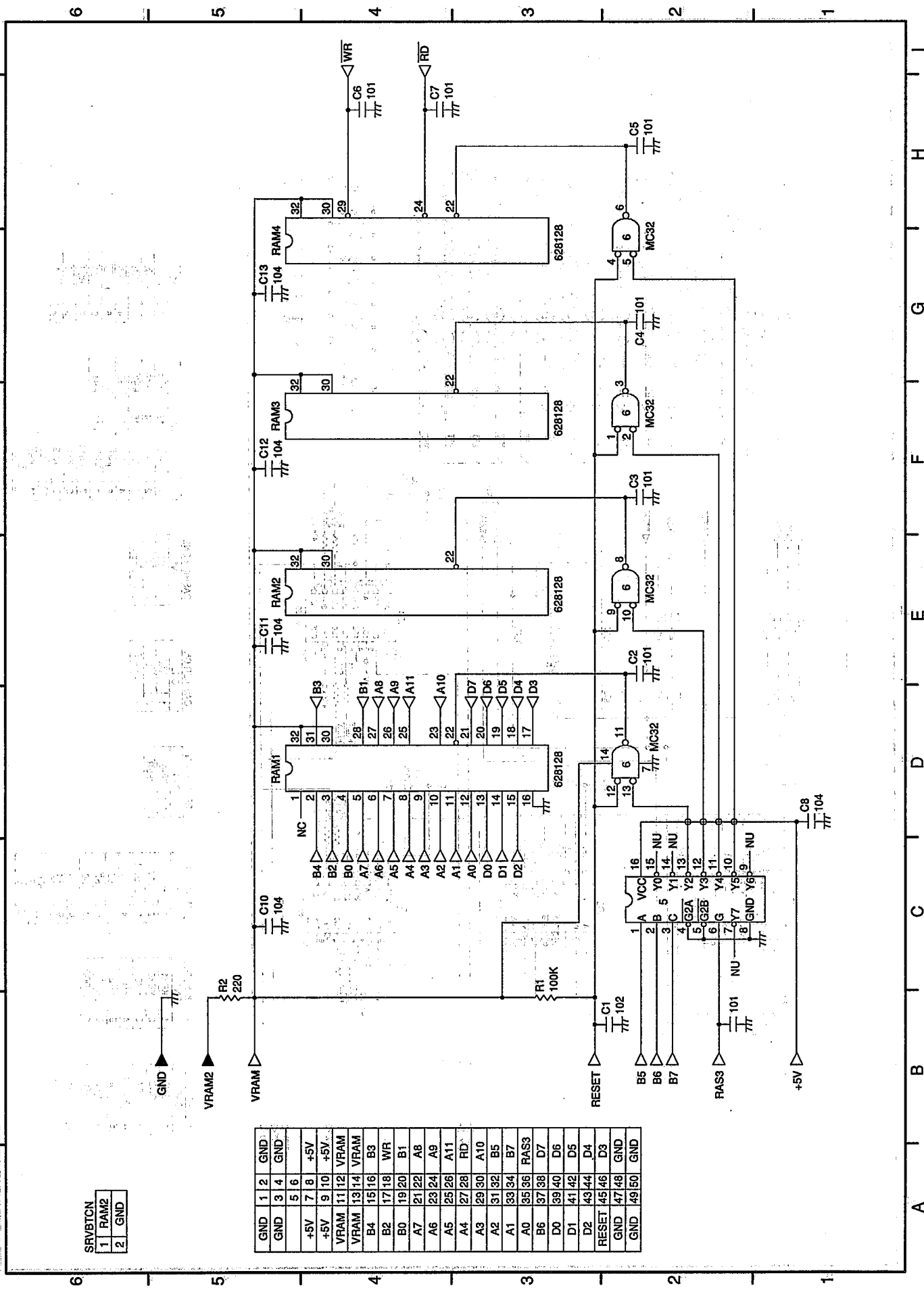
CASHIER CN1	CN2
1	C2
2	C3
3	CFSA

CASHIER CN2	
CN1	
1	$\overline{C0}$
2	$\overline{C1}$
3	$\overline{CESR}$

		CN9		
	1	RFS	13	KS11
	2	JFS	14	KS10
	3	JFS	15	KS7
	4	KS9	16	KS6
	5	KS13	17	KS5
	6	KS15	18	KS4
	7	KS14		
	8	KS3		
	9	KS2		
	10	KS0		
	11	KS1		
	12	KS12		

CN10	
1	CFSR
2	KR1A
3	KR1B
4	KR0A
5	KR0B
6	KR3A
7	KR3B
8	KR2B
9	KR2A

14-10. ER-01MB PWB circuit



SRVBTCH	1	RAM2
	2	GND

GND	1	2	GND
GND	3	4	GND
+5V	5	6	+5V
+5V	7	8	+5V
VRAM	9	10	VRAM
VRAM	11	12	VRAM
B4	13	14	B3
B4	15	16	B3
B0	17	18	WR
B0	19	20	B1
A7	21	22	A8
A6	23	24	A9
A5	25	26	A11
A4	27	28	RD
A3	29	30	A10
A2	31	32	B5
A1	33	34	B7
A0	35	36	RAS3
B6	37	38	D7
D0	39	40	D6
D1	41	42	D5
D2	43	44	D4
RESET	45	46	D3
GND	47	48	GND
GND	49	50	GND

SHARP PARTS GUIDE

ER-3250
MODEL ER-01MB

PRINTER: M-2640

CONTENTS

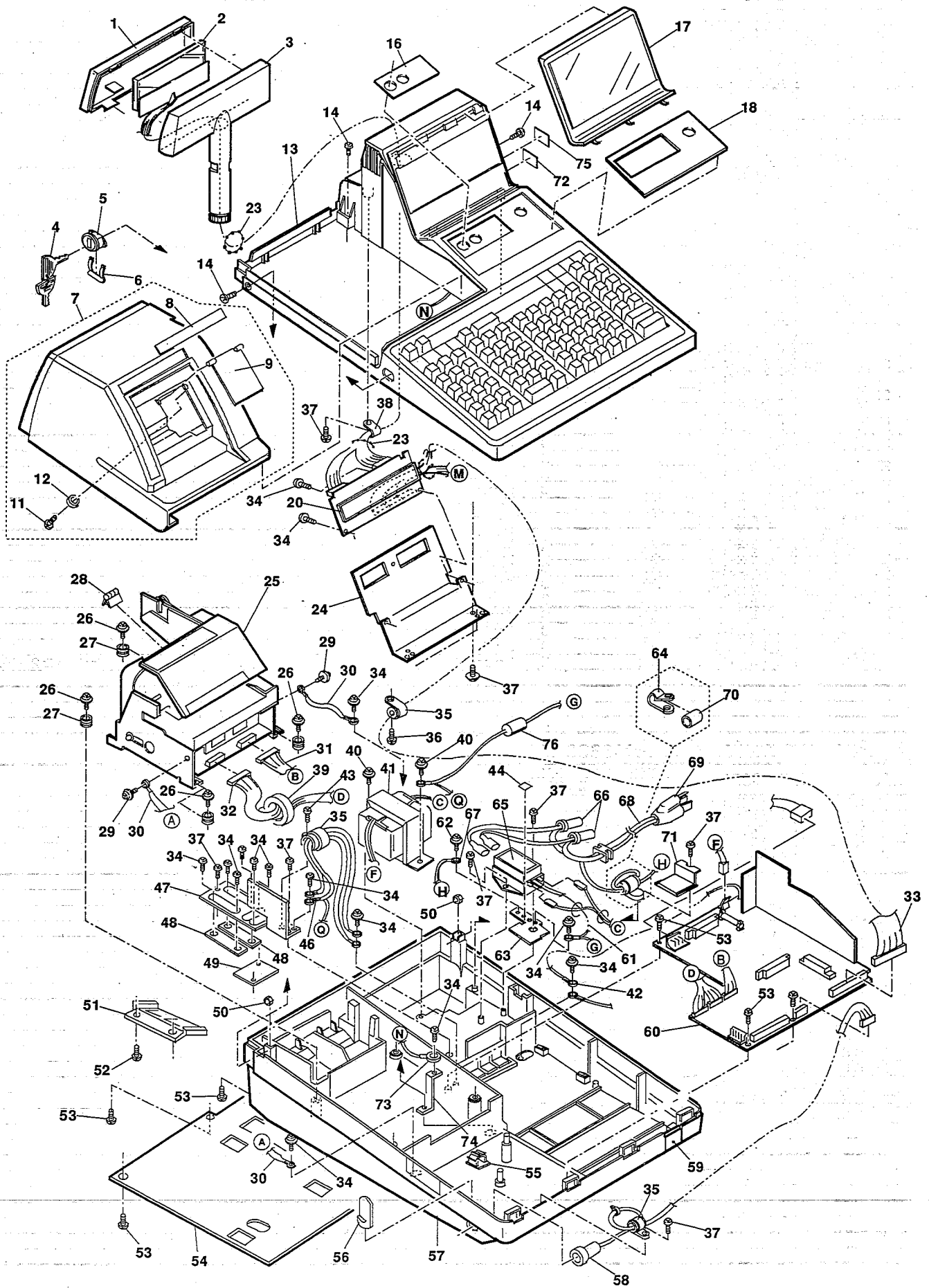
- 1 Exteriors**
- 2 Keyboard unit**
- 3 Packing material & Accessories**
- 4 Drawer box unit (SP460 type)**
- 5 Main PWB unit**
- 6 Pop-up PWB unit**
- 7 Articles for consumption**
- 8 [ER-01MB] Packing material & Accessories**
- 9 [ER-01MB] RAM PWB unit**
- Index**

Parts marked with "▲" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

1 Exteriors

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	PFI LW6870RCZZ	AL		D	Pop-up filter
2	CPWBF7136RC01	BD		E	Pop-up PWB unit
3	GCABB7055RCZZ	AL		D	Cabinet for customer display
4	LKGI M6784RCZZ	AD		B	Printer cover key (1PC)
5	LKGI W7107RC01	AK		B	Printer cover key (body)
6	MSPRT6689RC01	AC		C	Clip
7	CCOVH7000RC02	BA	N	D	Printer cover unit [Include No7~9,11]
8	HBDGD6873RCZZ	AD	N	D	Model badge
9	PFI LW6714RCZZ	AD		D	Journal filter
11	XUPSD20P04000	AA		C	Screw (2X4)
12	XWHS D20-04060	AA		C	Washer (M2)
13	CCABB7097RC02	BF	N	D	Top cabinet unit [Include No4~6,17]
14	XBBSC30P10000	AA		C	Screw (3X10)
16	HDECE6815RCZZ	AD		C	Switch panel
17	PFI LW6897RCZZ	AQ		C	Front filter
18	HDECE6814RCZZ	AH		C	Switch panel B
20	VVD16MD08GK-1	BE		B	Display tube
23	LBNDJ0004UCZZ	AA		C	Band (TE10K)
24	LANGK7419RCZZ	AL		C	Display angle
25	KI-OB6706RCZZ	CL		E	Printer(without near end sensor) (M2640)
26	LX-BZ1007CCZZ	AB		C	Screw (3X10KS)
27	PCUS-4101CCZZ	AB		C	Printer cushion
28	PSTM-6658RC01	AR		C	Stamp (YOUR RECEIPT THANK YOU)
29	XBPSD40P06K00	AA		C	Screw (4X6K)
30	QCNW-7121RCZZ	AD		C	Earth wire (Printer→Base plate)
31	QCNW-7453RCZZ	AP		C	Printer connector
32	QCNW-7114RCZZ	AK		C	Printer connector 3
33	QCNW-7456RCZZ	AQ		C	Lead wire (Display→Main PWB)
34	XBPSD30P06KS0	AA		C	Screw (3X6KS)
35	RCORF5003SCZZ	AK		C	Core(with clamp)
36	XBPSD30P10KS0	AB		C	Screw (3X10KS)
37	XUBSD30P08000	AA		C	Screw (3X8)
38	LBNDJ0011FCZZ	AB		C	Wire band (NK-5N)
39	RCORF6652RCZZ	AK		C	Core
40	XBPSD40P08KS0	AA		C	Screw (4X8KS)
41	RTRNP6782RCZZ	AZ		B	Power transformer
42	QCNW-7124RCZZ	AB		C	GND wire 2 (To switch angle)
43	XBPSD30P12KS0	AA		C	Screw (3X12KS)
44	TLAB-4681CCZZ	AA		D	Earth label (Export)
46	QCNW-7125RCZZ	AD		C	GND wire 3
47	LANGK7420RCZZ	AK		C	Option angle
48	GFTAS6698RCZZ	AE		D	Blind lid
49	LANGK7421RCZZ	AD		C	Connector cover
50	XNESD30-24000	AA		C	Nut (3NS)
51	LANGK7278RCZZ	AD		C	Cable angle
52	XBPSD30P04K00	AA		C	Screw (3X4K)
53	XUBSD30P06000	AA		C	Screw (3X6)
54	GITAU6721RCZZ	AM		D	Base plate
55	LHLDW5034BCZZ	AB		C	Wire holder (CKN-10)
56	GFTAS6762RCZZ	AB		D	Loader lid
57	GCABA7102RCZZ	BC	N	D	Bottom cabinet
58	QCNW-7018RCZZ	AL		C	SIO connector
59	GFTAF6761RCZZ	AB		D	Front lid
60	CPWBF7179RC07	CM	N	E	Main PWB unit
61	QCNW-7116RCZZ	AE		C	Earth wire G/Y
62	XBPBZ40P06K00	AA		C	Screw (4X6K)
63	GITAU6723RCZZ	AQ		D	Main earth plate
64	LHLDW0005SCZZ	AB		C	Cable holder
65	RFILN6001RCZZ	AT		C	Noise filter
66	QTANP6635RCZZ	AA		C	Terminal
67	QTANP0004HCZZ	AB		C	Lug terminal (4φ)
68	QCNW-7117RCZZ	AE		C	AC cable
69	QACCD8411QCZZ	AN		B	AC cord (6A Bush 2.5M)
70	RCORF6650RCZZ	AE		C	Core
71	HPNLC6800RCZZ	AB		C	AC cord panel
72	TCAUS1150CCZZ	AA		D	Caution card
73	QCNW-7120RCZZ	AE		C	Earth wire (Keyboard→Base plate)
74	LANGK7435RCZZ	AK		C	Earth angle
75	TLABG2744SCZZ	AA		D	Noise label A
76	RCORF1002LCZZ	AK		C	Core
	DKIT-B226RCZZ				PAPER NEAR END SENSOR

1 Exteriors



2 Keyboard unit

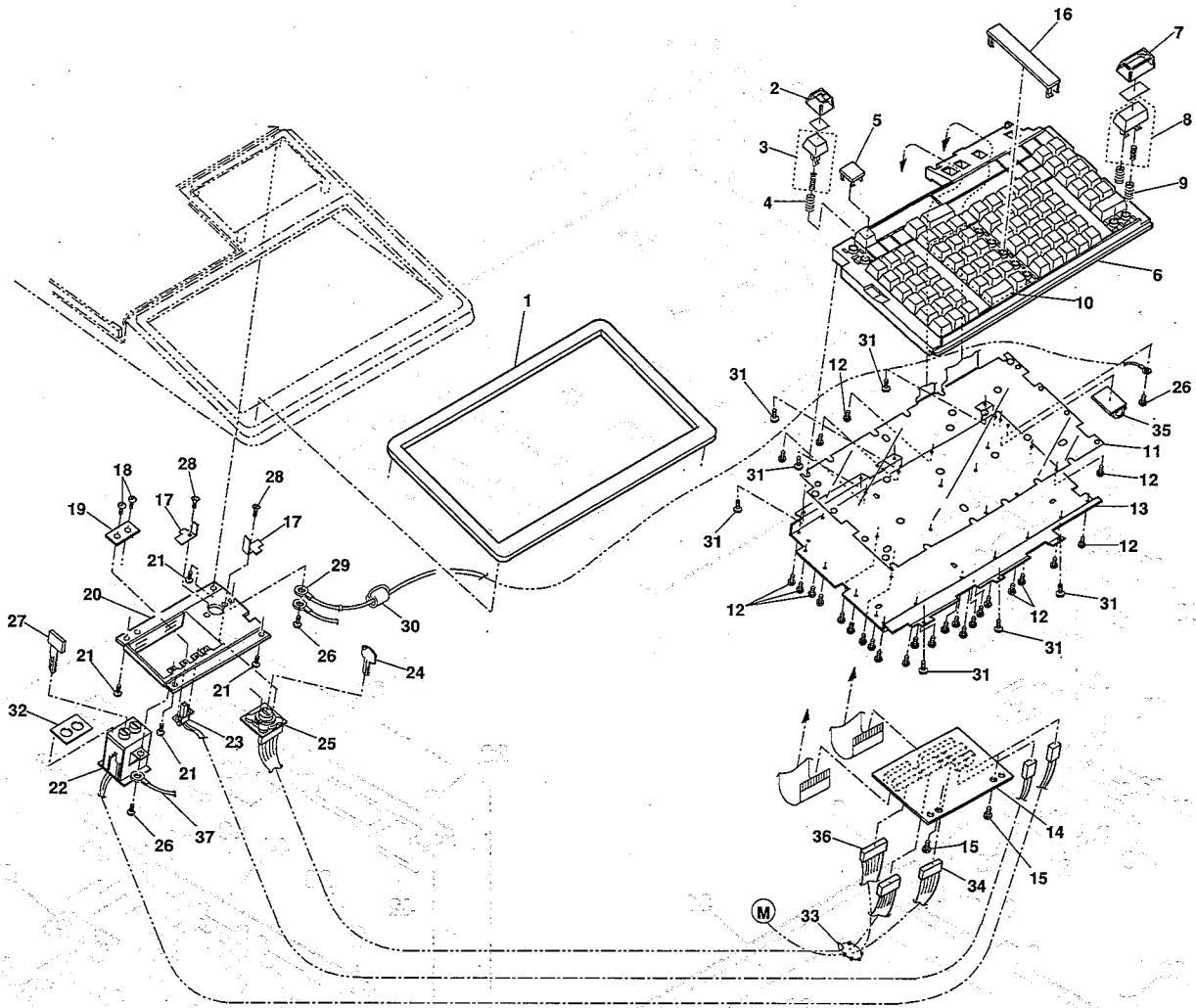
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	HDECE6816RCZZ	AY		C	Key deco. panel
2	0EMKT80020001	AC		C	Key cap(1×1) (TKT8002-00-001)
3	0EMWK46466510	AC		C	Key top(1×1) (TWK4646-65-010)
4	0EMWK45531120	AC		C	Spring(1×1) (TWK4553-11-020)
5	0EMWK45001410	AD		C	Dummy cover(1×1) (TWK4500-14-010)
6	0EMWK46690210	AW		C	Housing (TWK4669-02-010)
7	0EMKT80220001	AE		C	Key cap(1×2) (TKT8022-00-001)
8	0EMWK46466610	AE		C	Key top(1×2) (TWK4646-66-010)
9	0EMWK45531210	AC		C	Spring(1×2) (TWK4553-12-010)
10	0EMWK46466110	AR		C	Key top ass'y (TWK4646-61-010)
11	0EMWK46696010	BA		C	Pattern sheet ass'y (TWK4669-60-010)
12	0EMKE31133061	AA		C	Screw (M3×6)(TKE3113-30-060)
13	0EMWK46690510	AX		C	Plate (TWK4669-05-010)
14	0EMWK46696310	BG		E	Key PWB ass'y (TWK4669-63-0010)
15	0EMKE25122061	AA		C	Screw (M2×6)(TKE2512-20-0601)
16	0EMWK45001510	AE		C	Dummy cover(1×5) (TWK4500-15-010)
17	PZETE6652RCZZ	AB		C	Insulation sheet (for mode switch)
18	XBPSD20P04000	AA		C	Screw (2×4)
19	PZETE6651RCZZ	AB		C	Insulation sheet (for slide switch)
20	LANGT7246RCZZ	AG		C	Angle(for switch installment)
21	XUBSD30P06000	AA		C	Screw (3×6)
22	LKGiW7095RCZZ	AY		B	Clerk switch (body)
23	QSW-Z6773RCZZ	AN		B	Slide switch
24	LKGiM7110RCZZ	AG		B	Master key (MA)(2pcs)
	LKGiM7111RCZZ	AG		B	Operator key (OP)(2pcs)
	LKGiM7129RCZZ	AE		B	Sub master key (SM)(2pcs)
25	LKGiW7256RCZZ	AP		B	Mode switch (Body)
26	XBPSD30P06KSO	AA		C	Screw (3×6KS)
27	LKGiM7097RCZZ	AK		B	Clerk key(A)
	LKGiM7098RCZZ	AK		B	Clerk key(B)
28	XUSSD30P06000	AA		C	Screw (3×6)
29	QCNW-7360RCZZ	AB		C	Earth wire
30	RCORF6640RCZZ	AH		C	Core (TR-16-8-13)
31	XUBSD30P08000	AA		C	Screw (3×8)
32	PSHEF2792RCZZ	AG		C	Sheet
33	LBNDJ0004UCZZ	AA		C	Band (TE10K)
34	QCNW-7454RCZZ	AH		C	Key cable 2
35	LHLDW5034BCZZ	AB		C	Wire holder (CKN-10)
36	QCNW-7455RCZZ	AK		C	Key cable 1
37	QCNW-7120RCZZ	AE		C	Earth wire (Keyboard→Base plate)
101	0EMWK46690710	AR		C	Key label (TWK4669-07-010)
501	DUNTK9153RCZZ	BR		E	Keyboard unit

[Include No2~16,101]

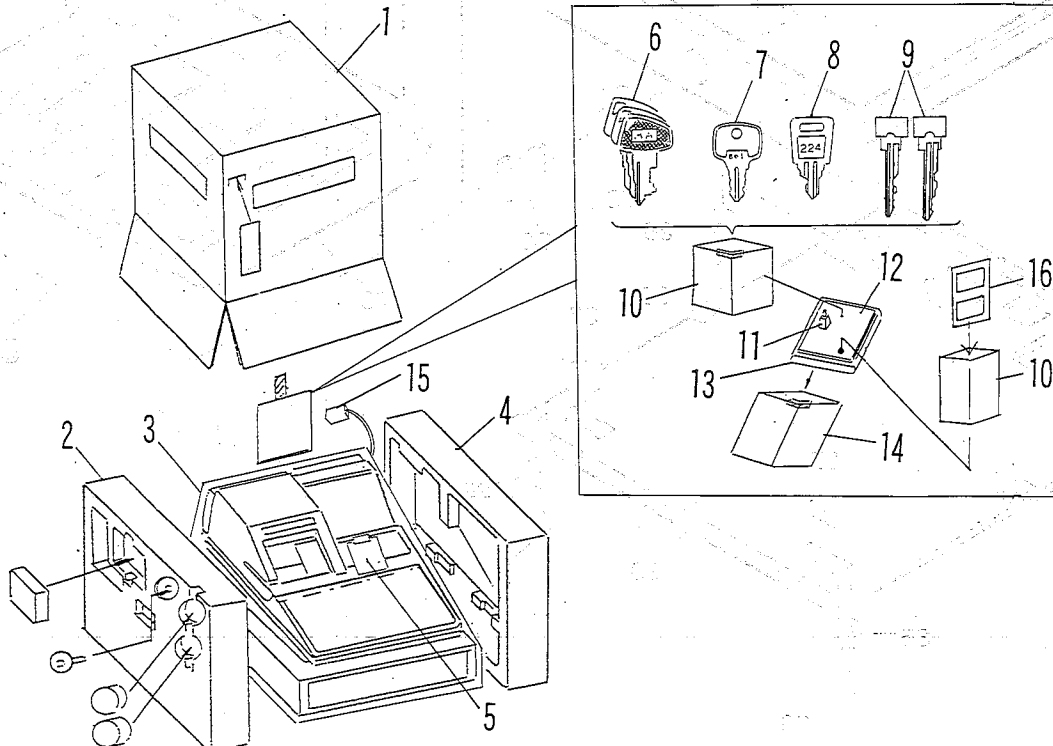
3 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	SPAKC7890RCZZ	AS	N	D	Packing case
2	SPAKA7579RCZZ	AP		D	Packing cushion (Left)
3	SSAKA2012KCZZ	AF		D	Vinyl bag (600×540×510)
4	SPAKA7578RCZZ	AP		D	Packing cushion (Right)
5	T/CADH6654RCZZ	AB		D	Caution card
6	LKGiM7110RCZZ	AG		B	Master key (MA)(2pcs)
	LKGiM7111RCZZ	AG		B	Operator key (OP)(2pcs)
	LKGiM7129RCZZ	AE		B	Sub master key (SM)(2pcs)
7	0AGLKM010B010	AH		B	Lock key (1PC)
8	LKGiM6784RCZZ	AD		B	Printer cover key.(1PC)
9	LKGiM7097RCZZ	AK		B	Clerk key(A)
	LKGiM7098RCZZ	AK		B	Clerk key(B)
10	SSAKH3012CCZZ	AA		D	Vinyl bag (80×120mm)
11	UINK-1001CCZZ	AK		S	Ink (5cc)
12	TINSK7180RCZZ	BB	N	D	Instruction book
13	GCOVD6871RCZZ	AP		D	Dust cover
14	SSAKH3015CCZZ	AA		D	Vinyl bag (260×360mm)
15	SSAKA5004CCZZ	AA		D	Vinyl bag (100×300mm)
16	TLABH6875RCZZ	AE		D	Key label
101	UBNDA1008CCZZ	AA		C	AC cord band (120mm)
	GCOVBL899RCZZ	AX			DRIP COVER

2 Keyboard unit

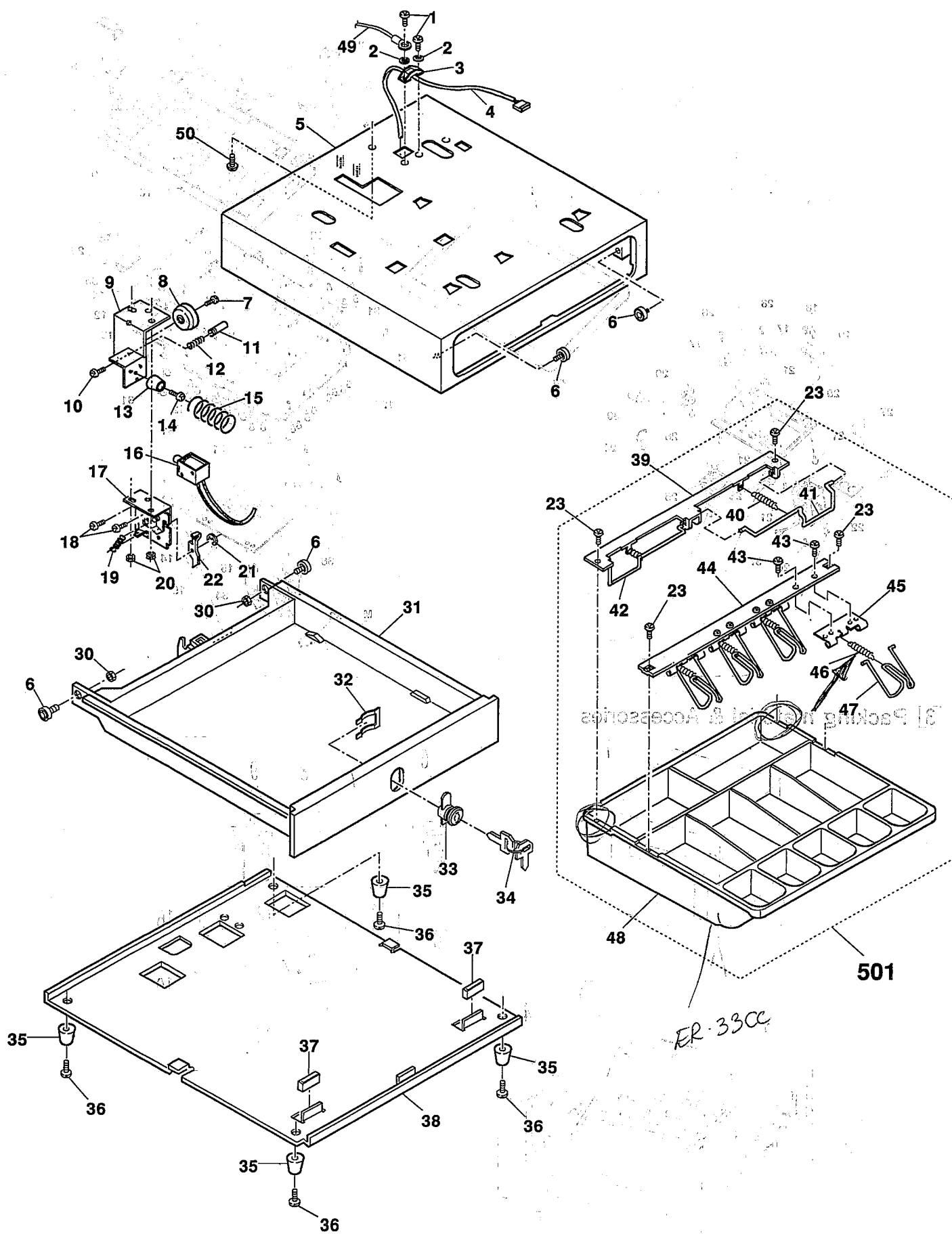


3 Packing material & Accessories



4 Drawer box unit(SP460 type)

How to pack 4 5



4 Drawer box unit(SP460 type)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	0AGXBD20038C1	AA		C	Screw (3×8)
2	0AGXWD8003050	AA		C	Washer (3mm)
3	0AGLDW200MKSS	AD		C	Holder
4	0AGQCW218MKSS	AL		B	Connector with wire (2pin with wire)
5	0AGGCM283S460	BF	N	D	Drawer cabinet
6	0AGNRP22B1L00	AE		C	Roller
7	0AGXBD801408W	AA		C	Screw with spring washer (4×8)
8	0AGRAL201MKSS	AD		C	Bell
9	0AGLCS201MKSS	AH		C	Unit chassis
10	0AGXBD806406N	AA		C	Screw (4×6)
11	0AGMLF201MKSS	AB		C	Bell hammer
12	0AGMST809MKSB	AB		C	Bell hammer spring
13	0AGGLG8022017	AB		C	Stopper rubber (Rear)
14	0AGXBD803315S	AA		C	Screw (3×15)
15	0AGMST805460A	AD		C	Push out spring
16	0AGRLU210MKSS	AQ		B	Plunger
17	0AGMKS212MKSS	AK		C	Lock unit
18	0AGXBD201306X	AA		C	Screw with washer (3×6)
19	0AGMST800MKSB	AB		C	Lock spring (For lock cam)
20	0AGLXZ800M4SP	AA		C	Spring nut (4mm)
21	0AGXRD8014060	AA		C	E type ring (4mm)
22	0AGMLF206MKSS	AB		C	Release lever
23	0AGXBD804306B	AA		C	Screw (3×6)
30	0AGLXZ801M6SP	AA		C	Spring nut (6mm)
31	0AGGDW473S460	AZ		D	Drawer case
32	0AGMSK805MKSS	AE		C	Lock key spring
33	0AGKAG010B010	AP		B	Lock key (body)
34	0AGLKM010B010	AH		B	Lock key (1PC)
35	0AGGLG801MKSS	AB		C	Rubber foot (26mm)
36	0AGXBD200415P	AA		C	Screw (4×15)
37	0AGLSG200MKSS	AB		C	Stopper rubber (Front)
38	0AGGiU143S460	AS		C	Bottom plate
39	0AGLBC610MKSS	AM		C	Bill pressure bracket (2A)
40	0AGMST600MKSB	AB		C	Bill pressure spring (2A)
41	0AGMLV607MKSS	AK		C	Bill pressure lever R (2A)
42	0AGMLV606MKSS	AK		C	Bill pressure lever L (2A)
43	0AGXBD805304N	AA		C	Screw (3×4)
44	0AGLBC609MKSS	AH		C	Bill pressure bracket (4A)
45	0AGLBC612MKSS	AD		C	Bill pressure angle
46	0AGMST604MKSB	AB		C	Bill pressure spring (4A)
47	0AGMLV602MKSS	AD		C	Bill pressure lever
48	0AGGCP615MKSS	AX		C	Money case
49	QCNCW-7122RCZZ	AD		C	Earth wire(Base plate→Drawer)
50	XBPSD40P08KS0	AA		C	Screw (4×8KS)
501	0AGCCP6156500	BD		C	Money case unit (6B/5C)
	(Unit)				
901	GBOXD7083RCZZ	BS	N	E	Drawer box unit [except No.49,50]

5 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	VHi27101RAK1A	BD	N	B	IC (27101RAK1A) <i>IC6</i>
2	LBNDJ0004UCZZ	AA		C	Band (TE10K)
3	PCUSS6761RCZZ	AA		C	Cushion for display tube
4	PRDAF6641RCZZ	AK		C	Heat sink
5	QCNCW1057ACZZ	AB		C	Connector (Short socket)
6	QCNCM1060AC03	AB		B	Connector (3pin)
7	QCNCM1101CCZZ	AB		B	Connector (2pin)
8	QCNCM2379RC0E	AC		C	Connector (5pin)
9	QCNC-6786RC3J	AQ		C	Connector (30pin)
10	QCNCM6821RC0C	AC		B	Connector (3pin)
11	QCNCM6865RC0E	AB		C	Connector (5pin)
12	QCNCM6865RC0i	AC		C	Connector (9pin)
13	QCNCM6865RC1A	AD		C	Connector (11pin)
14	QCNCM6865RC2J	AD		C	Connector (20pin)
15	QCNCM6926RC1H	AE		C	Connector (18pin)
16	QCNCW6973RC5J	AH		C	Connector (50pin)
17	QCNCW-7114RCZZ	AK		C	Printer connector 3
18	QCNCW-7124RCZZ	AB		C	GND wire 2 (To switch angle)
19	QCNCW-7127RCZZ	AB		C	GND wire 5
20	QCNCW-7253RCZZ	AB		C	GND jumper
21	QCNCW-7453RCZZ	AP		C	Printer connector
22	QCNCW-7454RCZZ	AH		C	Key cable 1
23	QCNCW-7455RCZZ	AK		C	Key cable 2
24	QCNCW-7456RCZZ	AQ		C	Lead wire (Display→Main PWB)
25	QCNCW-7463RCZZ	AB		C	Earth wire

5 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
26	QCNW-7475RCZZ	AE		C	GND wire
27	QFS-B0300QCZZ	AE		A	Fuse (1A 125V)
28	QFS-B0322QCZZ	AC		A	Fuse
29	QFS-A1037CCZZ	AC		A	Fuse (1.5A)(MINI TYPE)
30	QFSHA1002CCZZ	AB		C	Fuse holder (MINI TYPE)
31	QLUGE0002WCZZ	AB		C	Lug terminal
32	QSOCZ2042SC3Z	AE		C	IC socket (32pin)
33	QSOCZ6428ACZZ	AE		C	IC socket (for P-ROM) (28pin)
34	RALMB6640RCZZ	AF		B	Buzzer (SMX06)
35	RC-EZ688MRC1J	AQ		C	Capacitor (63WV 6800μF)
36	RC-KZ1054CCNZ	AB		C	Capacitor (0.1μF)
37	RCILC6632RCZZ	AQ		C	Coil
38	RCILC6641RCZZ	AQ		C	Coil
39	RCRSP1018CCZZ	AL		B	Crystal (32768Hz)
40	RCRSZ5001SCZZ	AD		B	Crystal (8.0MHz)
41	RCRSP6635RCZZ	AD		B	Crystal (4.91Hz)
42	RCRSZ6644RCZZ	AD		B	Crystal (CST4.19MGW)
43	RMPTC0104QCKB	AD		B	Block resistor (100KΩ×11 1/8W ±10%)
44	RMPTCB104QCKB	AE		B	Block resistor (100KΩ×12 1/8W ±10%)
45	RMPTC0104QCKB	AD		B	Block resistor (100KΩ×10 1/8W ±10%)
46	RMPTC5103QCKB	AC		B	Block resistor (10KΩ×5 1/8W ±10%)
47	RMPTC5104QCKB	AB		B	Block resistor (10KΩ×5 1/8W ±10%)
48	RMPTC6103QCKB	AC		B	Block resistor (10KΩ×6 1/8W ±10%)
49	RMPTC7103QCKB	AD		B	Block resistor (10KΩ×7 1/8W ±10%)
50	RMPTC8102QCKB	AD		B	Block resistor (1.0KΩ×8 1/8W ±10%)
51	RMPTC8103QCKB	AD		B	Block resistor (10KΩ×8 1/8W ±10%)
52	RMPTC8104QCKB	AD		B	Block resistor (10KΩ×8 1/8W ±10%)
53	RTNRH6783RCZZ	AN		B	Converter transformer
54	UBATN6639RCZZ	AS		B	Battery (170MA 2.4V)
55	VCCCPU1HH150J	AA		C	Capacitor (50WV 15PF)
56	VCCCPU1HH200J	AB		C	Capacitor (50WV 20PF)
57	VCCCPU1HH300J	AA		C	Capacitor (50WV 30PF)
58	VCCCPU1HH330J	AB		C	Capacitor (50WV 33PF)
59	VCEAEU1CW106M	AA		C	Capacitor (16WV 10μF)
60	VCEAGA2AW106M	AB		C	Capacitor (100WV 10μF)
61	VCEAGA2AW226M	AB		C	Capacitor (100WV 22μF)
62	VCEAGU1CW106M	AA		C	Capacitor (16WV 10μF)
63	VCEAGU1CW108M	AD		C	Capacitor (16WV 1000μF)
64	VCEAGU1HW105M	AA		C	Capacitor (50WV 1.0μF)
65	VCEAGU1HW227M	AC		C	Capacitor (50WV 220μF)
66	VCEAGU1HW477M	AD		C	Capacitor (50WV 470μF)
67	VCEAGU1VW228M	AG		C	Capacitor (35WV 2200μF)
68	VCKYPA1HB152K	AA		C	Capacitor (50WV 1500PF)
69	VCKYPA1HB391K	AA		C	Capacitor (50WV 390PF)
70	VCKYPU1HB101K	AA		C	Capacitor (50WV 100PF)
71	VCKYPU1HB102K	AA		C	Capacitor (50WV 1000PF)
72	VCKYPU1HB331K	AA		C	Capacitor (50WV 330PF)
73	VCKYPU1HB471K	AA		C	Capacitor (50WV 470PF)
74	VCKYPU1HB561K	AA		C	Capacitor (50WV 560PF)
75	VCQYNA1HM103K	AA		C	Capacitor (50WV 0.010μF)
76	VCQYNU1HM473K	AB		C	Capacitor (50WV 0.047μF)
77	VCQYNU1HM683K	AB		C	Capacitor (50WV 0.068μF)
78	VCQYNU2AM103K	AA		C	Capacitor (100WV 0.010μF)
79	VCSAVA1AE475M	AB		C	Capacitor (10WV 4.7μF)
80	VCSAVA1CE106M	AC		C	Capacitor (16WV 10μF)
81	VCSAVA1CE685M	AC		C	Capacitor (16WV 6.8μF)
82	VHDDSS131HV-1	AA		B	Diode (DSS131HV)
83	VHDDSS133HV-1	AA		B	Diode (DSS133HV)
84	VHDEK04-1	AD		B	Diode (EK04)
85	VHDBRV401-1	AG		B	Diode (RBV401)
86	VHD1SS82-1	AB		B	Diode (1SS82)
87	VHD10DF1-1	AD		B	Diode (10DF1)
88	VHEHZ9C1-1	AB		B	Zener diode (HZ9C1)
89	VHERD33EB4-1	AB		B	Zener diode (RD33EB4)
90	VHERD39EB3-1	AC		B	Zener diode (RD39EB3)
91	VHERD43EL3-1	AB		B	Zener diode (RD43EL3)
92	VHERD62EB1-1	AB		B	Zener diode (RD62EB1)
93	VHIHD63A03-1	BB		B	IC (HD63A03)
94	VHIH4728A20FS	AV		B	IC (H4728A20FS)
95	VHIR2C12N-1	AM		B	IC (IR2C12N)
96	VHIR3M03AV-1	AH		B	IC (IR9393)
97	VHIR9393-1	AE		B	IC (IR9393)
98	VHILH5167P-55	AT		B	IC (LH5167P-55)
99	VHILI2047P-1	AU		B	IC (LI2047P)
100	VHILZ95N13-1	AT		B	IC (LZ95N13)
101	VHIMC74HC00-1	AE		B	IC (TC74HC00)
102	VHIM54567P-1	AK		B	IC (M54567P)
103	VHISLA4392-1	AN		B	IC (SLA4392)
104	VHISMA4031-1	AL		B	IC (SMA4031)
105	VHISTR2024-1	AR		B	IC (STR2024)

5 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
106	VHITD62503P-1	AG		B	IC (TD62503P)
107	VHI62256LP15	BA		B	IC (62256LP15)
108	VHI643330R17F	BA		B	IC (643330R17F)
109	VRD-HT2HY561J	AA		C	Resistor (1/2W 560Ω ±5%)
110	VRD-RC2EY100J	AA		C	Resistor (1/4W 10Ω ±5%)
111	VRD-RC2EY101J	AA		C	Resistor (1/4W 100Ω ±5%)
112	VRD-RC2EY102J	AA		C	Resistor (1/4W 1.0KΩ ±5%)
113	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)
114	VRD-RC2EY104J	AA		C	Resistor (1/4W 100KΩ ±5%)
115	VRD-RC2EY105J	AA		C	Resistor (1/4W 1.0MΩ ±5%)
116	VRD-RC2EY132G	AA		C	Resistor (1/4W 1.3KΩ ±2%)
117	VRD-RC2EY181J	AA		C	Resistor (1/4W 180Ω ±5%)
118	VRD-RC2EY182G	AA		C	Resistor (1/4W 1.8KΩ ±2%)
119	VRD-RC2EY203G	AA		C	Resistor (1/4W 20KΩ ±2%)
120	VRD-RC2EY220J	AA		C	Resistor (1/4W 22Ω ±5%)
121	VRD-RC2EY221J	AA		C	Resistor (1/4W 220Ω ±5%)
122	VRD-RC2EY222J	AA		C	Resistor (1/4W 2.2KΩ ±5%)
123	VRD-RC2EY272J	AA		C	Resistor (1/4W 27KΩ ±5%)
124	VRD-RC2EY273J	AA		C	Resistor (1/4W 27KΩ ±5%)
125	VRD-RC2EY333J	AA		C	Resistor (1/4W 33KΩ ±5%)
126	VRD-RC2EY391J	AA		C	Resistor (1/4W 390Ω ±5%)
127	VRD-RC2EY392J	AA		C	Resistor (1/4W 3.9KΩ ±5%)
128	VRD-RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)
129	VRD-RC2EY472G	AA		C	Resistor (1/4W 4.7KΩ ±1%)
130	VRD-RC2EY473J	AA		C	Resistor (1/4W 47KΩ ±5%)
131	VRD-RC2EY561J	AA		C	Resistor (1/4W 560Ω ±5%)
132	VRD-RC2EY562J	AA		C	Resistor (1/4W 5.6KΩ ±5%)
133	VRD-RC2EY563J	AA		C	Resistor (1/4W 56KΩ ±5%)
134	VRD-RC2EY682J	AA		C	Resistor (1/4W 6.8KΩ ±5%)
135	VRD-RC2EY822G	AA		C	Resistor (1/4W 8.2KΩ ±2%)
136	VRD-RC2EY9R1J	AA		C	Resistor (1/4W 9.1Ω ±5%)
137	VRD-RC2EY912G	AA		C	Resistor (1/4W 9.1KΩ ±2%)
138	VRD-RC2EY000J	AA		C	Resistor (1/4W 0Ω ±5%)
139	VRNRC2EK1201F	AA		C	Resistor (1/4W 1.2KΩ ±1%)
140	VRNRC2EK3601F	AA		C	Resistor (1/4W 3.6KΩ ±5%)
141	VRS-RE3AAR68J	AA		C	Resistor (1W 0.68Ω ±5%)
142	VRS-RE3AA272J	AA		C	Resistor (1W 2.7KΩ ±5%)
143	VRS-ST3ABR10J	AA		C	Resistor (1W 0.10Ω ±5%)
144	VSJA101-///-1	AB		B	Transistor (JA101)
145	VSJC501-///-1	AB		B	Transistor (JC501)
146	VS2SA673-///-1	AD		B	Transistor (2SA673)
147	VS2SC4153-///-1	AG		B	Transistor (2SC4153)
148	VS2SD1769-///-1	AE		B	Transistor (2SD1769)
149	VS2SD667-///-1	AD		B	Transistor (2SD667)
150	VVD16MD08GK-1	BE		B	Display tube
151	XBPSD30P08KS0	AA		C	Screw (3×8KS)
152	XBPSD30P08K00	AA		C	Screw (3×8K)
153	XBPSD30P10KS0	AB		C	Screw (3×10KS)
154	XBPSD30P12KS0	AA		C	Screw (3×12KS)
155	XBPSD30P14KS0	AA		C	Screw (3×14)
156	XNESD30-24000	AA		C	Nut (3NS)
(Unit)					
901	CPWBF7179RC07	CM	N	E	Main PWB unit

PART #5.

MAIN ROM

VHI 27101 RAKIX

OPTION ER-30 IN

VHI 27512 RECEIP

6 Pop-up PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LBNDJ0004UCZZ	AA		C	Band (TE10K)
2	QCNCW6918RC09	AH		C	Connector with wires (9pin)
3	QCNCW6918RC11	AK		C	Connector with wires (11pin)
4	VVKFIP7B13/-1	AX		B	Display tube
(Unit)					
901	CPWBF7136RC01	BD		E	Pop-up PWB unit

7 Articles for consumption

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DPAPR1006CSZZ	AR		S	Roll paper
2	PRBN-2320RCZZ	AX		S	Ribbon cassette (purple)
3	UINK-1001CCZZ	AK		S	Ink for stamp
	GCOVB 6899 RCZZ	AX			DRIP COVER

time SW9 nism (2)

9 [ER-01MB] RAM PWB unit

901	CPWBF7185RC01	BN	E	RAM PWB unit
-----	---------------	----	---	--------------

901

0

Index

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
[C]					
CCABB7097RC02	1- 13	BF	N	D	
CCOVH7000RC02	1- 7	BA	N	D	
CPWBF7136RC01	1- 2	BD		E	
"	6- 901	BD		E	
CPWBF7179RC07	1- 60	CM	N	E	
"	5- 901	CM	N	E	
CPWBF7185RC01	9- 901	BN		E	
[D]					
DPAPR1006CSZZ	7- 1	AR		S	
DUNTK9153RCZZ	2- 501	BR		E	
[G]					
GBÖXD7083RCZZ	4- 901	BS	N	E	
GCABA7102RCZZ	1- 57	BC	N	D	
GCABB7055RCZZ	1- 3	AL		D	
GCÖVD6871RCZZ	3- 13	AP		D	
GFTAF6761RCZZ	1- 59	AB		D	
GFTAS6698RCZZ	1- 48	AE		D	
GFTAS6762RCZZ	1- 56	AB		D	
GiTAU6721RCZZ	1- 54	AM		D	
GiTAU6723RCZZ	1- 63	AQ		D	
[H]					
HBDGD6873RCZZ	1- 8	AD	N	D	
HDECE6814RCZZ	1- 18	AH		C	
HDECE6815RCZZ	1- 16	AD		C	
HDECE6816RCZZ	2- 1	AY		C	
HPNLC6800RCZZ	1- 71	AB		C	
[K]					
Ki-ÖB6706RCZZ	1- 25	CA		E	
[L]					
LANGK7278RCZZ	1- 51	AD		C	
LANGK7419RCZZ	1- 24	AL		C	
LANGK7420RCZZ	1- 47	AK		C	
LANGK7421RCZZ	1- 49	AD		C	
LANGK7435RCZZ	1- 74	AK		C	
LANGT7246RCZZ	2- 20	AG		C	
LBNDJ0004UCZZ	1- 23	AA		C	
"	2- 33	AA		C	
"	5- 2	AA		C	
"	6- 1	AA		C	
LBNDJ0011FCZZ	1- 38	AB		C	
LHLDW0005SCZZ	1- 64	AB		C	
LHLDW5034BCZZ	1- 55	AB		C	
"	2- 35	AB		C	
LKGiM6784RCZZ	1- 4	AD		B	
"	3- 8	AD		B	
LKGiM7097RCZZ	2- 27	AK		B	
"	3- 9	AK		B	
LKGiM7098RCZZ	2- 27	AK		B	
"	3- 9	AK		B	
LKGiM7110RCZZ	2- 24	AG		B	
"	3- 6	AG		B	
LKGiM7111RCZZ	2- 24	AG		B	
"	3- 6	AG		B	
LKGiM7129RCZZ	2- 24	AE		B	
"	3- 6	AE		B	
LKGiW7095RCZZ	2- 22	AY		B	
LKGiW7107RC01	1- 5	AK		B	
LKGiW7256RCZZ	2- 25	AP		B	
LX-BZ1007CCZZ	1- 26	AB		C	
[M]					
MSPRT6689RC01	1- 6	AC		C	
[P]					
PCUS-4101CCZZ	1- 27	AB		C	
PCUS-6653RCZZ	8- 1	AS		C	
PCUSS6761RCZZ	5- 3	AA		C	
PFILW6714RCZZ	1- 9	AD		D	
PFILW6870RCZZ	1- 1	AL		D	
PFILW6897RCZZ	1- 17	AQ		C	
PRBN-2320RCZZ	7- 2	AX		S	
PRDAF6641RCZZ	5- 4	AK		C	
PSHEF2792RCZZ	2- 32	AG		C	
PSPAG6707RCZZ	9- 1	AD		C	
PSPAZ6706RCZZ	8- 2	AB		D	
PSTM-6658RC01	1- 28	AR		C	
PZETE6651RCZZ	2- 19	AB		C	
PZETE6652RCZZ	2- 17	AB		C	
[Q]					
QACCD8411QCZZ	1- 69	AN		B	
QCNC-6786RC3J	5- 9	AQ		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
QCNCM1060AC03	5- 6	AB		B	
QCNCM1101CCZZ	5- 7	AB		B	
QCNCM2379RC0E	5- 8	AC		C	
QCNCM6802RC0B	9- 2	AC		B	
QCNCM6821RC0C	5- 10	AC		B	
QCNCM6865RC0E	5- 11	AB		C	
QCNCM6865RC0i	5- 12	AC		C	
QCNCM6865RC1A	5- 13	AD		C	
QCNCM6865RC2J	5- 14	AD		C	
QCNCM6926RC1H	5- 15	AE		C	
QCNCM6972RC5J	9- 3	AH		C	
QCNCW1057ACZZ	5- 5	AB		C	
QCNCW6918RC09	6- 2	AH		C	
QCNCW6918RC11	6- 3	AK		C	
QCNCW6973RC5J	5- 16	AH		C	
QCNCW-7018RCZZ	1- 58	AL		C	
QCNCW-7114RCZZ	1- 32	AK		C	
"	5- 17	AK		C	
QCNCW-7116RCZZ	1- 61	AE		C	
QCNCW-7117RCZZ	1- 68	AE		C	
QCNCW-7120RCZZ	1- 73	AE		C	
"	2- 37	AE		C	
QCNCW-7121RCZZ	1- 30	AD		C	
QCNCW-7122RCZZ	4- 49	AD		C	
QCNCW-7124RCZZ	1- 42	AB		C	
"	5- 18	AB		C	
QCNCW-7125RCZZ	1- 46	AD		C	
QCNCW-7127RCZZ	5- 19	AB		C	
QCNCW-7253RCZZ	5- 20	AB		C	
QCNCW-7360RCZZ	2- 29	AB		C	
QCNCW-7453RCZZ	1- 31	AP		C	
"	5- 21	AP		C	
QCNCW-7454RCZZ	2- 34	AH		C	
"	5- 22	AH		C	
QCNCW-7455RCZZ	2- 36	AK		C	
"	5- 23	AK		C	
QCNCW-7456RCZZ	1- 33	AQ		C	
"	5- 24	AQ		C	
QCNCW-7463RCZZ	5- 25	AB		C	
QCNCW-7475RCZZ	5- 26	AE		C	
QFS-A1037CCZZ	5- 29	AC		A	
QFS-B0300QCZZ	5- 27	AE		A	
QFS-B0322QCZZ	5- 28	AC		A	
QFSHA1002CCZZ	5- 30	AB		C	
QLUGE0002WCZZ	5- 31	AB		C	
QSÖCZ2042SC32	5- 32	AE		C	
"	9- 4	AE		C	
QSÖCZ6428ACZZ	5- 33	AE		C	
QSW-Z6773RCZZ	2- 23	AN		B	
QTANP0004HCZZ	1- 67	AB		C	
QTANP6635RCZZ	1- 66	AA		C	
[R]					
RALMB6640RCZZ	5- 34	AF		B	
RC-EZ688MRC1J	5- 35	AQ		C	
RC-KZ1054CCN2	5- 36	AB		C	
RC-KZ1054CCZZ	9- 5	AB		C	
RCILC6632RCZZ	5- 37	AQ		C	
RCILC6641RCZZ	5- 38	AQ		C	
RCÖRF1002LCZZ	1- 76	AK		C	
RCÖRF5003SCZZ	1- 35	AK		C	
RCÖRF6640RCZZ	2- 30	AH		C	
RCÖRF6650RCZZ	1- 70	AE		C	
RCÖRF6652RCZZ	1- 39	AK		C	
RCRSP1018CCZZ	5- 39	AL		B	
RCRSP6635RCZZ	5- 41	AD		B	
RCRSZ5001SCZZ	5- 40	AD		B	
RCRSZ6644RCZZ	5- 42	AD		B	
RFILN6001RCZZ	1- 65	AT		C	
RMPTCA104QCKB	5- 43	AD		B	
RMPTCB104QCKB	5- 44	AE		B	
RMPTC0104QCKB	5- 45	AD		B	
RMPTC4103QCKB	9- 6	AC		B	
RMPTC5103QCKB	5- 46	AC		B	
RMPTC5104QCKB	5- 47	AB		B	
RMPTC6103QCKB	5- 48	AC		B	
RMPTC7103QCKB	5- 49	AD		B	
RMPTC8102QCKB	5- 50	AD		B	
RMPTC8103QCKB	5- 51	AD		B	
RMPTC8104QCKB	5- 52	AD		B	
RTRNH6783RCZZ	5- 53	AN		B	

XEROX

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
RTRNP6782RCZZ	1- 41	AZ		B	
[S]					
SPAKA7578RCZZ	3- 4	AP		D	
SPAKA7579RCZZ	3- 2	AP		D	
SPAKC6908RCZZ	8- 3	AP		D	
SPAKC7890RCZZ	3- 1	AS	N	D	
SSAKA0001SCZZ	8- 4	AA		D	
SSAKA2012KCZZ	3- 3	AF		AD	
SSAKA5004CCZZ	3- 15	AA		D	
SSAKH3012CCZZ	3- 10	AA		D	
SSAKH3015CCZZ	3- 14	AA		D	
[T]					
TCADH6654RCZZ	3- 5	AB		D	
TCAUS1150CCZZ	1- 72	AA		D	
TINSK7180RCZZ	3- 12	BB	N	D	
TLAB-4681CCZZ	1- 44	AA		D	
TLABG2744SCZZ	1- 75	AA		D	
TLABH6875RCZZ	3- 16	AE		D	
[U]					
UBATN6639RCZZ	5- 54	AS		B	
UBNDA1008CCZZ	3- 101	AA		C	
UINK-1001CCZZ	3- 11	AK		S	
//	7- 3	AK		S	
[V]					
VCCCPU1HH150J	5- 55	AA		C	
VCCCPU1HH200J	5- 56	AB		C	
VCCCPU1HH300J	5- 57	AA		C	
VCCCPU1HH330J	5- 58	AB		C	
VCEAEU1CW106M	5- 59	AA		C	
VCEAGA1CW106M	9- 7	AA		C	
VCEAGA2AW106M	5- 60	AB		C	
VCEAGA2AW226M	5- 61	AB		C	
VCEAGU1CW106M	5- 62	AA		C	
VCEAGU1CW108M	5- 63	AD		C	
VCEAGU1HW105M	5- 64	AA		C	
VCEAGU1HW227M	5- 65	AC		C	
VCEAGU1HW477M	5- 66	AD		C	
VCEAGU1VW228M	5- 67	AG		C	
VCKYPA1HB101K	9- 8	AA		C	
VCKYPA1HB102K	9- 9	AA		C	
VCKYPA1HB152K	5- 68	AA		C	
VCKYPA1HB391K	5- 69	AA		C	
VCKYPU1HB101K	5- 70	AA		C	
VCKYPU1HB102K	5- 71	AA		C	
VCKYPU1HB331K	5- 72	AA		C	
VCKYPU1HB471K	5- 73	AA		C	
VCKYPU1HB561K	5- 74	AA		C	
VCQYNA1HM103K	5- 75	AA		C	
VCQYNU1HM473K	5- 76	AB		C	
VCQYNU1HM683K	5- 77	AB		C	
VCQYNU2AM103K	5- 78	AA		C	
VCSAVA1AE475M	5- 79	AB		C	
VCSAVA1CE106M	5- 80	AC		C	
VCSAVA1CE685M	5- 81	AC		C	
VHDDSS131HV-1	5- 82	AA		B	
VHDDSS133HV-1	5- 83	AA		B	
VHDEK04///-1	5- 84	AD		B	
VHDBRV401///-1	5- 85	AG		B	
VHD1SS82///-1	5- 86	AB		B	
VHD10DF1///-1	5- 87	AD		B	
VHEHZ9C1///-1	5- 88	AB		B	
VHERD33EB4///-1	5- 89	AB		B	
VHERD39EB3///-1	5- 90	AC		B	
VHERD4.3EL3-1	5- 91	AB		B	
VHERD6.2EB1-1	5- 92	AB		B	
VHIEH628128L0	9- 10	BY		B	
VHIDH63A03///-1	5- 93	BB		B	
VHIH4728A20FS	5- 94	AV		B	
VHIIR2C12N///-1	5- 95	AM		B	
VHIIR3M03AV-1	5- 96	AH		B	
VHIIR9393///-1	5- 97	AE		B	
VHILH5167P-55	5- 98	AT		B	
VHIL12047P///-1	5- 99	AU		B	
VHIL295N13///-1	5- 100	AT		B	
VHIMC74HC00-1	5- 101	AE		B	
VHIMC74HC138F	9- 11	AG		B	
VHIMC74HC32-F	9- 12	AC		B	
VHIM54567P///-1	5- 102	AK		B	
VHISLA4392///-1	5- 103	AN		B	
VHISMA4031///-1	5- 104	AL		B	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VHISTR2024/-1	5- 105	AR		B	
VHITD62503P-1	5- 106	AG		B	
VHI27101RAK1A	5- 1	BD	N	B	
VHI62256LP15/-	5- 107	BA		B	
VHI643330R17F	5- 108	BA		B	
VRD-HT2HY561J	5- 109	AA		C	
VRD-RC2EY000J	5- 138	AA		C	
VRD-RC2EY100J	5- 110	AA		C	
VRD-RC2EY101J	5- 111	AA		C	
VRD-RC2EY102J	5- 112	AA		C	
VRD-RC2EY103J	5- 113	AA		C	
VRD-RC2EY104J	5- 114	AA		C	
//	9- 13	AA		C	
VRD-RC2EY105J	5- 115	AA		C	
VRD-RC2EY132G	5- 116	AA		C	
VRD-RC2EY181J	5- 117	AA		C	
VRD-RC2EY182G	5- 118	AA		C	
VRD-RC2EY203G	5- 119	AA		C	
VRD-RC2EY220J	5- 120	AA		C	
VRD-RC2EY221J	5- 121	AA		C	
//	9- 14	AA		C	
VRD-RC2EY222J	5- 122	AA		C	
VRD-RC2EY272J	5- 123	AA		C	
VRD-RC2EY273J	5- 124	AA		C	
VRD-RC2EY333J	5- 125	AA		C	
VRD-RC2EY391J	5- 126	AA		C	
VRD-RC2EY392J	5- 127	AA		C	
VRD-RC2EY472G	5- 129	AA		C	
VRD-RC2EY472J	5- 128	AA		C	
VRD-RC2EY473J	5- 130	AA		C	
VRD-RC2EY561J	5- 131	AA		C	
VRD-RC2EY562J	5- 132	AA		C	
VRD-RC2EY563J	5- 133	AA		C	
VRD-RC2EY682J	5- 134	AA		C	
VRD-RC2EY822G	5- 135	AA		C	
VRD-RC2EY9R1J	5- 136	AA		C	
VRD-RC2EY912G	5- 137	AA		C	
VRNRC2EK1201F	5- 139	AA		C	
VRNRC2EK3601F	5- 140	AA		C	
VRS-RE3AAR68J	5- 141	AA		C	
VRS-RE3AA272J	5- 142	AA		C	
VRS-ST3ABR10J	5- 143	AA		C	
VSJA101-///-1	5- 144	AB		B	
VSJC501-///-1	5- 145	AB		B	
VS2SA673-///-1	5- 146	AD		B	
VS2SC4153-///-1	5- 147	AG		B	
VS2SD1769-///-1	5- 148	AE		B	
VS2SD667-///-1	5- 149	AD		B	
VVD16MD08GK-1	1- 20	BE		B	
//	5- 150	BE		B	
VVKFIP7B13///-1	6- 4	AX		B	
[X]					
XBBSC30P10000	1- 14	AA		C	
XBPBZ40P06K00	1- 162	AA		C	
XBPSD20P04000	2- 18	AA		C	
XBPSD30P04K00	1- 52	AA		C	
XBPSD30P06KS0	1- 34	AA		C	
//	2- 26	AA		C	
XBPSD30P08KS0	5- 151	AA		C	
XBPSD30P08K00	5- 152	AA		C	
XBPSD30P10KS0	1- 136	AB		C	
//	5- 153	AB		C	
XBPSD30P12KS0	1- 43	AA		C	
//	5- 154	AA		C	
XBPSD30P14KS0	5- 155	AA		C	
XBPSD40P06K00	1- 29	AA		C	
XBPSD40P08KS0	1- 40	AA		C	
//	4- 50	AA		C	
XNESD30-24000	1- 50	AA		C	
//	5- 156	AA		C	
XUBSD30P06000	1- 53	AA		C	
//	2- 21	AA		C	
XUBSD30P08000	1- 37	AA		C	
//	2- 31	AA		C	
XUPSD20P04000	1- 11	AA		C	
XUSSD30P06000	2- 28	AA		C	
XWHS20-04060	1- 12	AA		C	
[O]					
OAGCCP6156500	4- 501	BD		C	
OAGGCM283S460	4- 5	BF	N	D	

ER3250A

[illegible]

SHARP

COPYRIGHT © 1991 BY SHARP CORPORATION

All rights reserved.

Printed in Japan.

No part of this publication may be reproduced,
stored in a retrieval system, or transmitted,
in any form or by any means,
electronic, mechanical, photocopying, recording, or otherwise,
without prior written permission of the publisher.

SHARP CORPORATION
Information Systems Group
Quality & Reliability Control Center
Yamatokoriyama, Nara 639-11, Japan

Mar. 1991 Printed in Japan (B)