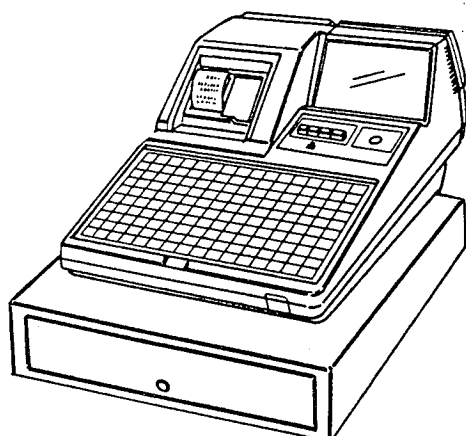


SHARP SERVICE MANUAL

CODE:00ZER3310SM-E



[ER-3310]

**ELECTRONIC
CASH REGISTER**

ER-3310
MODEL ER-3311

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.

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Parts Guide

SHARP CORPORATION

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The contents are subject to change without notice.

1. BLOCK DIAGRAM

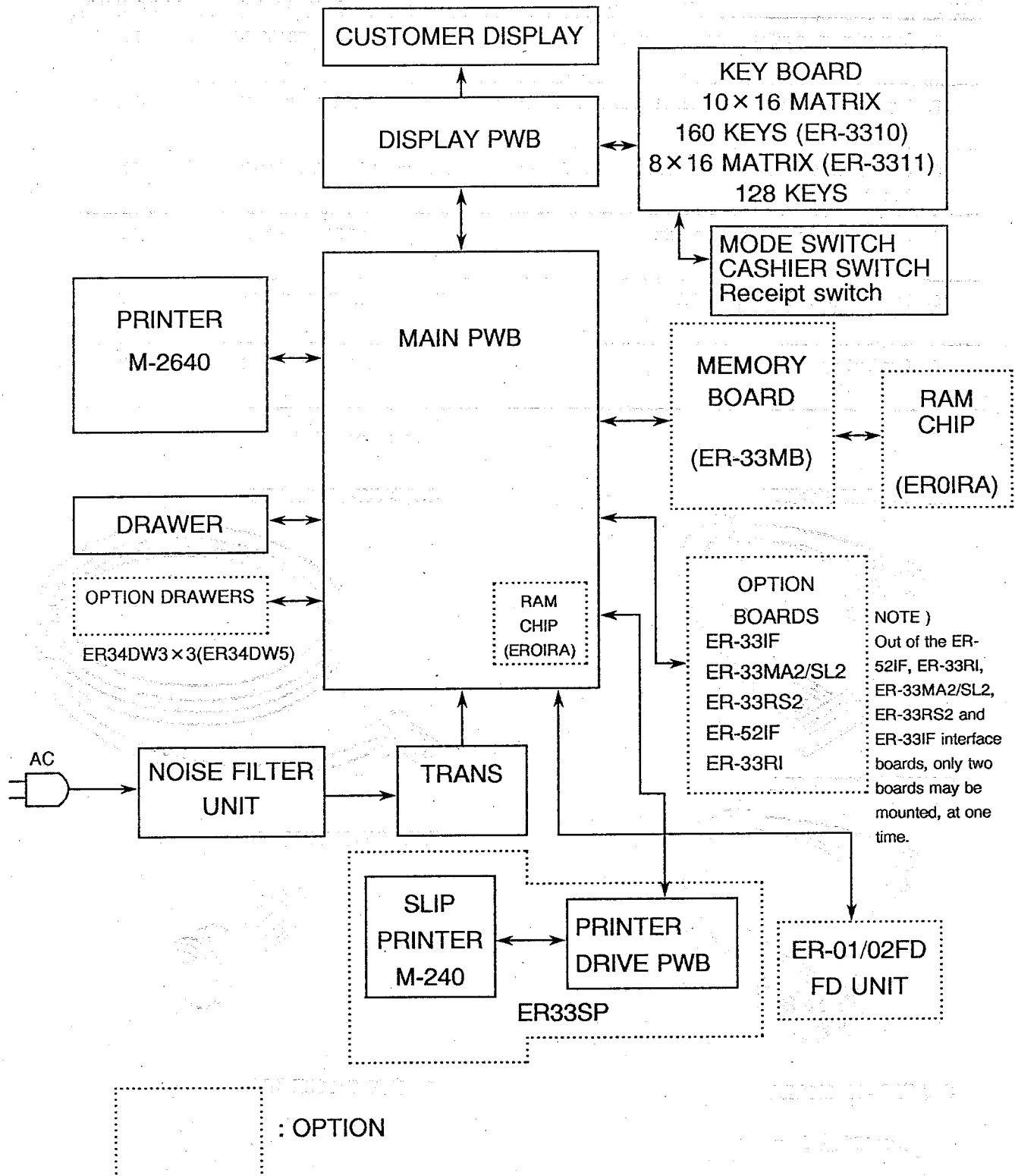
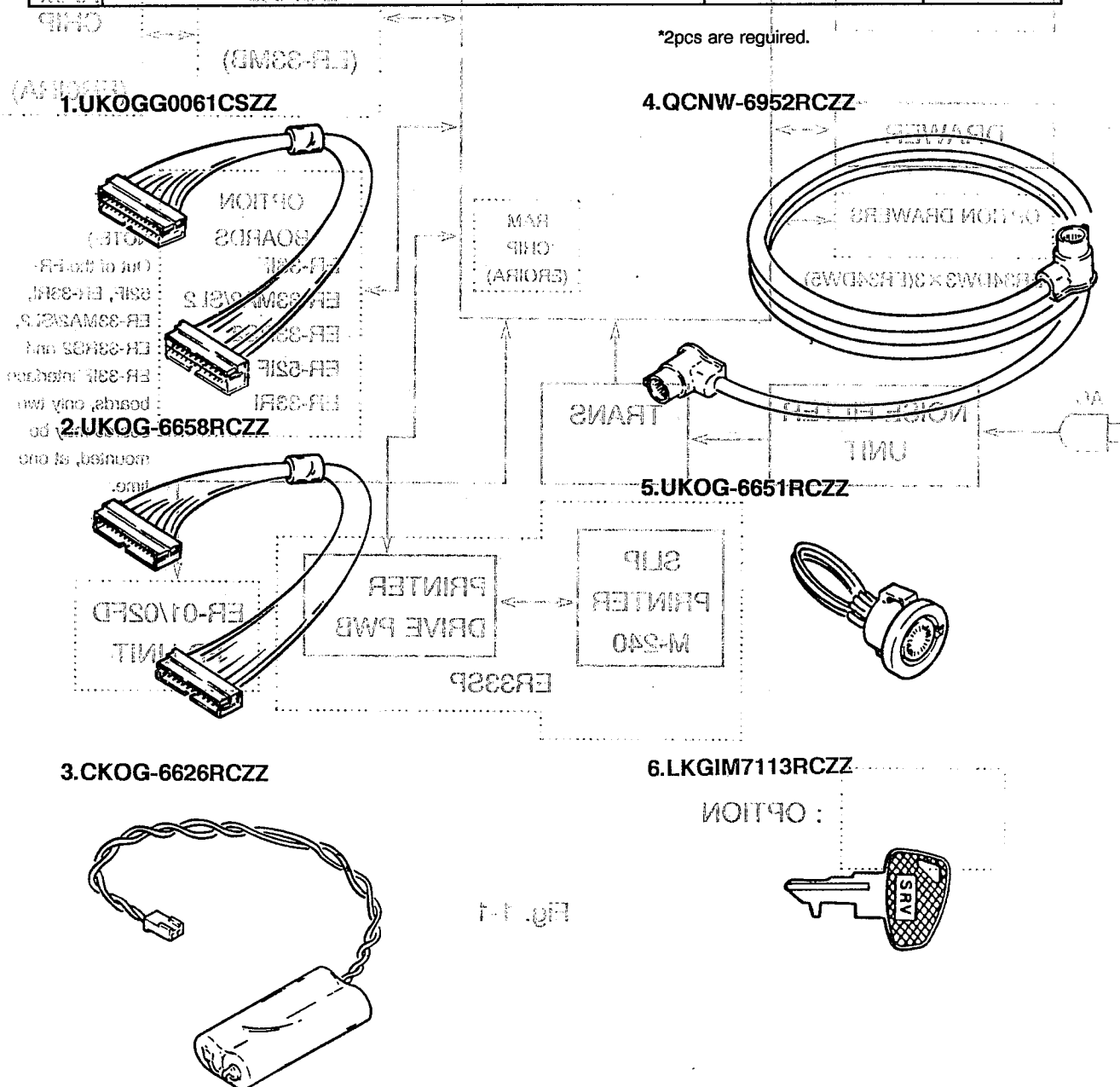


Fig. 1-1

2. SPECIAL SERVICE TOOLS

1. BLOCK DIAGRAM

NO.	Description	PARTS CODE	PRICE RANK
1.	Expansion cable with 30pin connectors for optional Board*	UKOGG0061CSZZ	BF
2.	Expansion cable with 18pin connectors for Memory Board*	UKOG-6658RCZZ	BA
3.	Service battery with 2pin connector for main PWB and optional memory board*	CKOG-6626RCZZ	AX
4.	ER-52CB cable for memory transfer	QCNW-6952RCZZ	AY
5.	Loop back connector for serial i/F	UKOG-6651RCZZ	AY
6.	Service Key	LKGIM7113RCZZ	AK



3. REFERENCE DOCUMENTS

- (1) Cash register basic manual
- (2) Printer M-2640 service manual (00ZM2640/SM-E) SECR-286
- (3) Option service manual for ER3310/3311.
- (4) Options installation manual for ER3310/3311.
- (5) SLIP printer M-240 service manual SECR-

4. SPECIFICATIONS

4-1 Appearance/Rating

1) Appearance

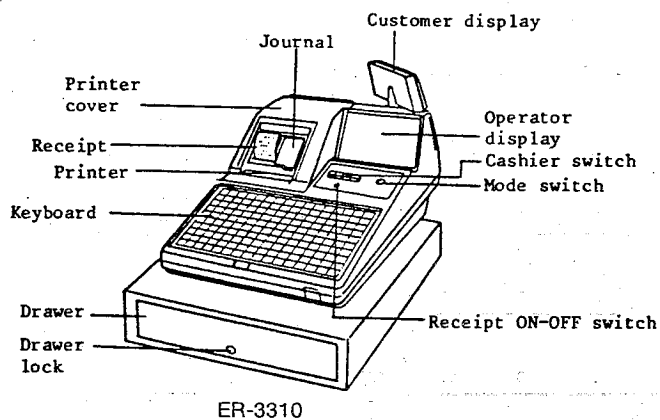
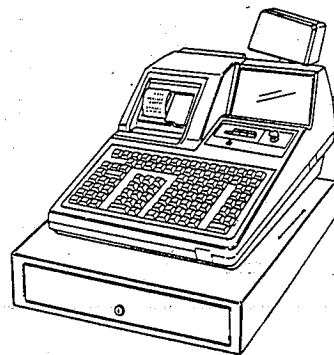


Fig.4-1

Power source	AC 120V ($\pm 10\%$) 60Hz
Power consumption	Standby: 14 watts Maximum: 32 watts, with no options. Maximum: 60 watts, 650mA, with options installed.
Operating temperature	0°C~40°C (32°F~104°F)
Operating humidity	10%~90% (RH)
Physical dimensions, including the drawer	440 (W) × 507 (D) × 331 (H) mm 17 31/32 (W) 20 11/16 (D) × 13 1/2 (H) inch
Weight	ER-3310 : 16 Kg ER-3311 : 17 Kg



4-3 Key board

(1) Standard key layout

ER-3310 (FLAT KEY BOARD)

RECEIPT	JOURNAL	SLIP	PRINT	RCPT	SCALE	77	78	79	80	5	10	15	20	NS	CONV
97	68	69	70	71	72	73	74	75	76	4	9	14	19	FS SHIFT	FS TEND
97	55	59	60	61	62	63	64	65	66	3	8	13	18	CH4	CH3
49	50	51	52	53	54	55	56	L1	PROMO #1	2	7	12	17	CH2	CH1
41	42	43	44	45	46	47	48	L2	PROMO #2	1	6	11	16	CHK	CH1
35	34	35	36	37	38	39	40	L3	PLU/SUB	RA	PO	TAX	@/FOR	CL	CA2
25	26	27	28	29	30	31	32	TABLE #	CASH #	TAX1 SHIFT	TAX2 SHIFT	7	8	9	TRAY SET
17	18	19	20	21	22	23	24	COVER CNT	SERV #	⊖1	⊖2	4	5	6	MDSE SET
9	10	11	12	13	14	15	16	PB	TIP	%1	%2	1	2	3	1/2 SET
1	2	3	4	5	6	7	8	CB	SRVC	RFND	VOID	0	00	.	PAYAT

Standard key sheet
Parts code
: PSHEZ6720RCZZ

DIRECT PLU KEY															
↑ RECEIPT	↑ JOURNAL	L1	12	13	14	15	16	17	18	19	20	21	22	NS	CONV
		L2	1	2	3	4	5	6	7	8	9	10	11	FS SHIFT	FS TEND
SLIP	PRINT	L3	RCPT						PROMO #1	PROMO #2	RA	PO		CH4	CH5
SERV #	CASH #	PLU/SUB		@/FOR	•	CL								CH2	CH3
TABLE #	TAX	TAX1 SHIFT	TAX2 SHIFT	7	8	9								CHK	CH1
COVER CNT	SCALE	Θ1	Θ2	4	5	6								CA2	TRAY SBTL
PB	TIP	%1	%2	1	2	3								#/ SBTL	MDSE SBTL
CB	SRVC	RFND	VOID	0		00								CA/AT	

DPT KEY

(2) Key top name

standard key top

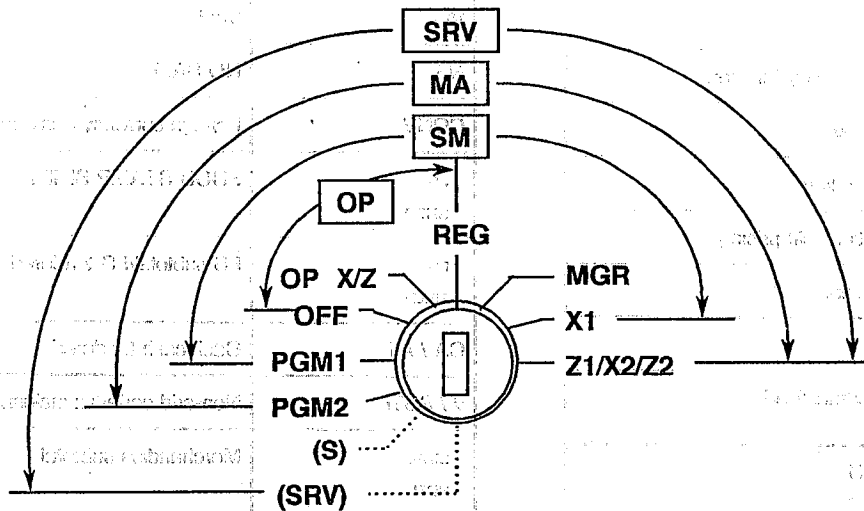
Keytop symbol	Key function
00, 0~9	Numeric key
1~20	Department key
@ / FOR	Multiplication/split pricing
•	Decimal point
CL	Clear
↑ RECEIPT ↑ JOURNAL	Receipt/journal feed
1~80	Direct PLU
PROMO #1 ~ PROMO #2	Promotion (dept. 21 ~ 22)
SLIP	Slip print
PRINT	Validation print
RCPT	Print duplicate
L ₁ ~L ₃	PLU shift
PLU / SUB	PLU/sub dept code entry
SCALE	Scale entry
CASH#	Cashier code (sign on/off)
SERV #	Server code entry
COVER CNT	Number of customers
PB	Previous balance or additional order
CB	Credit balance or new check
TIP	TIP IN, TIP PAID
SRVC	SERVICE
RA	RECEIVED ON ACCOUNT
PO	PAID OUT
TAX1 SHIFT TAX2 SHIFT	TAX1/TAX2 SHIFT
TAX	MANUAL TAX
⊖1, ⊖2	Discount-1/discount-2
%1, %2	%1, %2
RFND	Refund

Keytop symbol	Key function
VOID	Void
NS	NO SALE
CONV	Foreign currency conversion
FS SHIFT	FOOD STAMP SHIFT
FS TEND	FS subtotal/FS tendered
CA / AT	Cash/cash tendered
# / SBTL	Non-add code/tax inclusive subtotal
MDSE SBTL	Merchandise subtotal
TRAY SBTL	Tray subtotal
CA ₂	Cash-2
CHK	Check
CH ₁ ~CH ₅	Charge-1 to charge-5
TABLE #	Table number entry

OPTION KEY TOP

Keytop symbol	Key function
MGR#	Manager code entry
%3, %4	%3, %4
DEPO	DEPOSIT
TRNS IN TRNS OUT	Trans in/trans out server change
DEPO RFND	DEPOSIT REFUND
CHK ADD	GUEST CHECK ADD
RTN	Return
21~99	Department key
81~100	Direct PLU key
EAT IN 1~3	Eat in subtotal-1 to subtotal-3
FINAL	FINAL

4-4 Mode switch



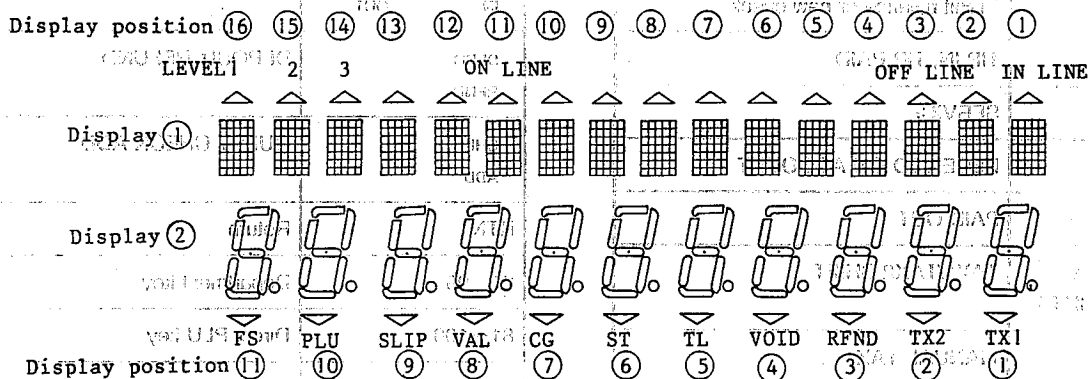
- *The key can be removed in the REG or OFF position.
- *Position OP.X/Z can be prohibited by programming.
- *Service mode is not prompted on the display.

[Functions]

- Function for each key position.
- SRV: Allows execution of service mode programming and reading.
- S: NOT USED
- 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 X/Z: Allows X or Z operation by servers or cashiers.
- REG: Allows registrations.
- MGR: Allows the operations, by authorized person 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



[View]
Display①

Item	Display position	Description
Keyboard entry	16~5	Alphanumerics
Merchandise name,	16~5	Displays such as department, PLU, etc.
Error	16~5	Kind of error displayed by alphanumerics
Status	4~1	Mode and status displayed by alphanumerics
(LEVEL)3	14	The "▲" indicator turns on for the PLU level 3.
(LEVEL)2	15	The "▲" indicator turns on for the PLU level 2.
(LEVEL)1	16	The "▲" indicator turns on for the PLU level 1.
ON LINE	11	The "▲" indicator turns on during on-line connection, and flickers while data is being transmitted.
OFF LINE	3	The "▲" indicator turns on when it is off line in the in-line mode (terminal number = 000) or off line in on-line mode, and turns off when it is in the in-line mode (terminal number not / 000) or on line in the on-line mode.
IN LINE	1	The "▲" indicator turns on during in-line communication.
(B.M. Down)	6	The "▲" indicator turns on when in-line back-up master is not communicated.

Display②

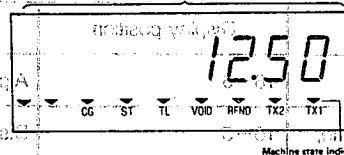
Amount	8~1	Character pattern 1234567890,
Repeat	11	Starts from "2" and only the first digit is displayed for a number above 10.
Negative sign	9~4	A floating "-" is displayed.
TX1	1	The "▼" indicator turns on when the [TAX1 SHIFT] key is depressed. The "▼" indicator turns on when registering taxable-1 merchandise.
TX2	2	The "▼" indicator turns on when the [TAX2 SHIFT] key is depressed. The "▼" indicator turns on when registering taxable-2 merchandise.
RFND	3	The "▼" indicator turns on when the [REFUND] or [RETURN] key is depressed. The "▼" indicator turns on when registering refund or return.
VOID	4	The "▼" indicator turns on when the [VOID] key is depressed. The "▼" indicator turns on when registering void.
TL	5	The "▼" indicator turns on when a transaction has been complete with the [CASH], [CHECK], or [CHARGE] key. Does not turn on when closing tendered.
ST	6	The "▼" indicator turns on when displaying a subtotal.
CG	7	The "▼" indicator turns on when displaying the amount of change after the tender operation has been complete.
VAL	8	The "▼" indicator turns on when validation is programmed required.
SLIP	9	The "▼" indicator turns on when printing a slip (real time print).
PLU	10	The "▼" indicator turns on when in PLU registration.
FS	11	The "▼" indicator turns on when registering a food stamp applicable item.
Sentinel	11	The "●" indicator turns on when the current balance is above the prescribed limit.

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 currently available
ENTER CHECK #	Enter Guest check # compulsory

(2) CUSTOMER DISPLAY

Amount: max. 8 characters



Machine state indicator lamps*

[Display description]

Identical to columns 1 to 9 of the operator side display-2, except the "VAL" indicator appears on the operator side only.

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 : 7×7 (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)×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 : 40 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 : Porous rubber, 30(W)×20(H) mm
17. External dimensions : 163.7(W)×214.8(D)×159.2(H) mm

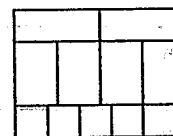
4-7 DRAWER

(1) Cash compartment

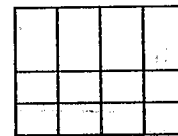
- Detachable from the drawer case
- Paper money compartment not detachable from coin compartment
- Available number of compartments
U.S.A. version: 6B, 6C
Canadian version: 6B, 5C
South African version: 4B, 8C
- Kinds of available compartment assembly



6B/6C



6B/5C



4B/8C

(2) Keylock

- Key lock location
U.S.A. canadian version: Front
South African version: Side
- Key operation
U.S.A., canadian version:
Close : 180° = counterclockwise rotation
Open : 180° = clockwise rotation
South African version:
Close : Automatic
Open : 90° = clockwise rotation

Status kind display

Prompt	Significance
No prompt	REG mode
MGR.	MGR mode
VOID	VOID mode
SRV.	SRV mode
PGM1	PGM1 mode
PGM2	PGM2 mode
TIME	TIME mode
X1	X1 mode
Z/X2	Z1/X2/Z2 mode
VAL	Validation required mode
SLIP	Slip print required mode
#	Non-add code entry required mode
LOCK	Cashier not specified

4-8 Memorys

ITEM	TOTALIZER	COUNTER	PRESET	PRESET
GT	12d×3S			
Z counter		4d×8		
DEPARTMENT	8d×20(99)S	6d×20(99)S	6d×20(99) 2d×20(99) 1d×20(99) 1d×20(99) 1d×20(99) 1d×20(99) 1d×20(99) 8(12)ch×20(99) 1d×20(99) 1d×20(99) 1d×20(99) 1d×20(99) 1d×20(99) 1d×20(99) 4d×5×20(99) 2d×20(99)	UNIT PRICE HALO + / - TAX SORT 1/2 SIS or SIF Inhibit or provide OPEN and/or PRESET Alpha numeric descriptor Validation enforce HASH Flag for report Promotion/normal Scale compulsory/inhibited Food stampable Promotion code Kitchen printer No.
DEPT. TTL	8d×4		8ch×4	Alpha numeric
PLU	8d×80S	6d×80S 6d×80S	6d×80 1d×80 1d×80 1d×80 2d×80 2d×80 8(12)ch×80 1d×80 4d×3×80 2d×3×80 2d×1×80 1d×80	UNIT PRICE (or HALO AMOUNT) + / - TAX SORT 1/2 Inhibit or provide Split pricing denominator Dept. number Alpha numeric descriptor Food stampable Linking PLU Stock Group Kitchen printer No. Scale compulsory/allow/disallow
NET	8d×3S		8ch×3	Alpha numeric
VOID	8d×5	4d×5	8ch×5	VOID in REG. mode, two kind of VOID TTLs in VOID mode, HASH VOID and SBTL VOID
REFUND RETURN	8d×4S	4d×4S	8ch×2 1d×1	Normal & hash REND Alpha numeric Validation enforce
P/O	8d×1S	4d×1S	8ch×1 1d×1 2d×1	Alpha numeric Validation enforce HALO

ITEM	TOTALIZER	COUNTER	PRESET	PRESET
R/A	8d x 1S	4d x 1S	1d x 1 8ch x 1 1d x 1 2d x 1	Tend./Direct Alpha numeric Validation enforce HALO
TX' BL SALES	8d x 2S		8ch x 2	Alpha numeric
TAX TTL	8d x 9S		98 steps 4d x 2 2d x 1	[1/2] Table(s) % TAX manual tax HALO
MEDIA TTL	8d x 8S	4d x 8S	8ch x 8 8d x 1 1d x 8 2d x 8 1set x 8	Alpha numeric Sentinel Flag for report HALO Functional programming (JOB#260)
(-)	8d x 2S	4d x 2S	8ch x 2 1d x 2 1d x 2 1d x 2 1d x 2	Alpha numeric +/- Food stampable Taxable HALO ITEM/ST
%	8d x 4S	4d x 4S	4d x 4 1d x 4 8ch x 4 4d x 4 1d x 4 1d x 4 1d x 4 1d x 4	% rate +/- Alpha numeric HALO Food stampable Taxable ITEM/ST Entry
CASH CHECK	8d x 1S	4d x 1S	8d x 1 8ch x 1 1d x 1	HALO Alpha numeric Non add code entry enforce
CASH SALE	8d x 2S	4d x 2S	8ch x 2	Alpha numeric
CHK CHANGE	8d x 1S	4d x 1S	8d x 1 8ch x 1	HALO Alpha numeric
TIP (TOTAL)	8d x 1S	4d x 1S	2d x 1 4d x 1 1d x 1	HALO Rate Validation enforce
- PLU TTL	8d x 1S	4d x 1S	8ch x 1	Alpha numeric
FS SALE	8d x 1S	4d x 1S	8ch x 1	Alpha numeric
FS CHANGE	8d x 1S		8ch x 1	Alpha numeric
0 P-bal		4d x 1S	8ch x 1	Alpha numeric
NO SALE		4d x 1S	8ch x 1	Alpha numeric

ITEM	TOTALZER	COUNTER	PRESET	PRESET
VALIDATION		4d×1S	8ch×1 1set×1	Alpha numeric JOB#255 PROGRAMMING
SLIP COUNT		4d×1S	8ch×1 1set×1	Alpha numeric JOB#255 PROGRAMMING
CUSTOMER		4d×1S	8ch×1	Alpha numeric
PERIODIC TTL	8d×455(745)	4d×455(745)		
CONSECUTIVE		4d×1		
MACHINE No.			3d×1	
Conversion	8d×1S	4d×1S	6d×1 8ch×1	Conversion rate Alpha numeric
EAT IN SBTL	8d×3S	4d×3S		
OPTIONAL			6d×10 1set×4	Stack report optional feature programming (JOB# 256)
HOURLY TTL	8d×48	4d×48		
CASHIER			4d×1 1d×1	Code Drawer
SALES	8d×1×4(9)	4d×1×4(9)	8ch×1×4(9)	Cashier's name
PO	8d×1×4(9)	4d×1×4(9)	8ch×1×4(9)	Same descriptor with the general report
RA	8d×1×4(9)	4d×1×4(9)	8ch×1×4(9)	
REFUND	8d×1×4(9)	4d×1×4(9)	8ch×1×4(9)	
VOID	8d×1×4(9)	4d×1×4(9)	8ch×1×4(9)	
(-)	8d×2	4d×2	8ch×1×4(9)	
MEDIA	8d×6	4d×6	8ch×1×4(9)	
SERVER	8d×1×14(99) 8d×2×14(99) 8d×8×14(99)	4d×1×14(99) 4d×2×14(99) 4d×8×14(99)	4d×1 8ch×1×14(99) 4d×2×14(99) 4d×2×14(99)	Code Server's name TIP PBLU code Media
SLIP BUFFER	16d×(43)			
BALANCE FILE	8d×9×100(999)	4d×1×100(999) 2d×1×100(999) 4d×1×100(999) 4d×1×100(999) 1d×100(999)	4d×1	Amount, cover count Print position Table # Server # Flag Code

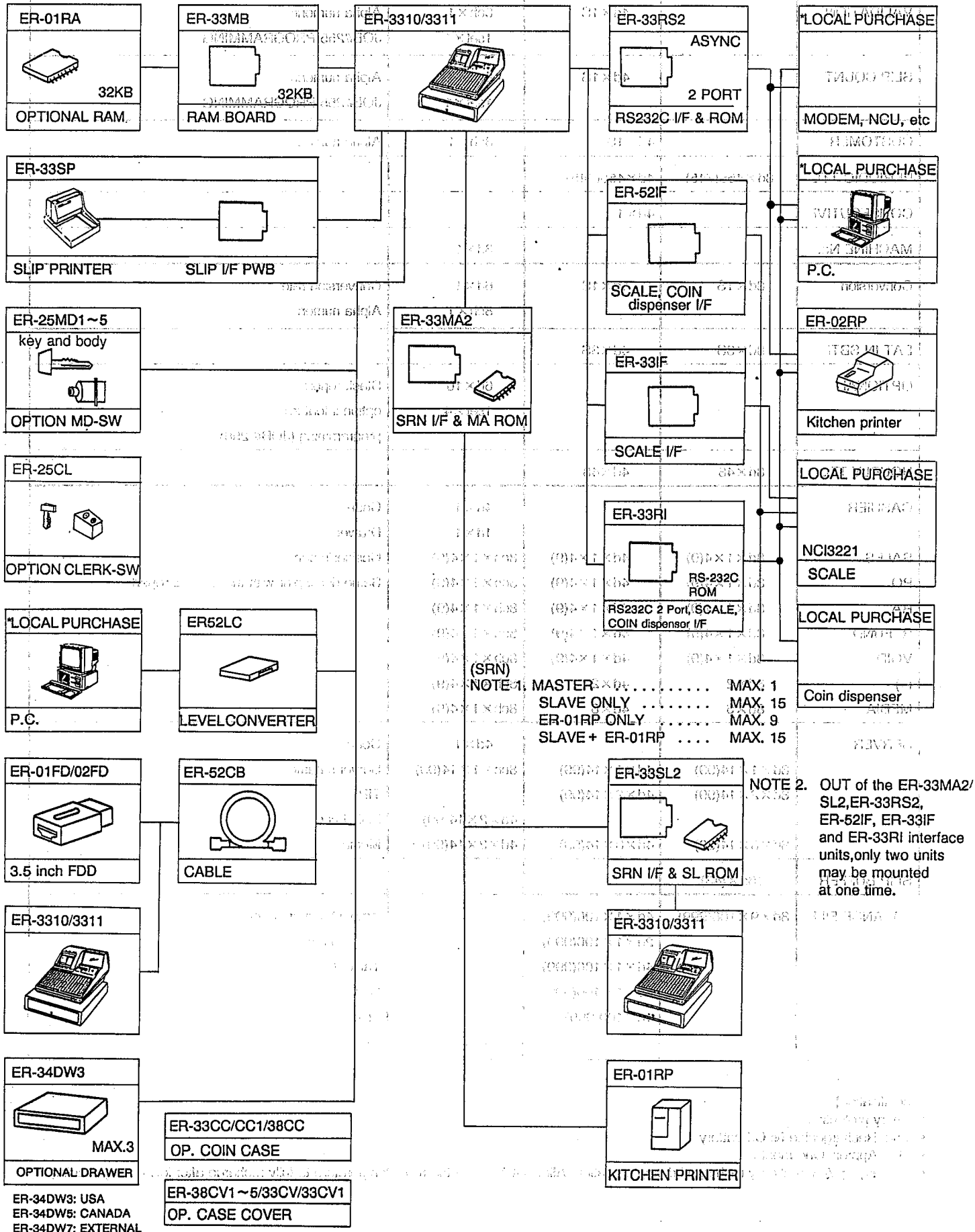
[Specification]

Memory protection

- Kind: Rechargeable Ni-Cd battery
- Life: Approx. One month
- Recharging: Automatically recharged during operation, Allow 24 hours in the room temperature to fully recharge after low battery reading.

5. Options

5-1 ER-3310/3311 System Configuration



5-2. OPTIONS

NO.	NAME	MODEL	DESCRIPTION
1.	SLIP PRINTER	ER-33SP	Printer and its interface inclusive
2.	Kitchen Printer	ER-01RP	For SRN system
		ER-02RP	For RS232C system
3.	Mode key variation	ER-25MD1~5	For USA CANADA
		ER-31MD1~5	For South Africa
4.	Cashier key variation	ER-25CL	Barrel lock key
5.	Expansion Drawer (MAX3 units)	ER-34DW3	6B/6C for USA
		ER-34DW5	6B/5C for CANADA
		ER-34DW7	4B/8C for South Africa
6.	Coin case	ER-33CC	6B/6C for USA
		ER-33CC1	6B/5C for CANADA
		ER-38CC	4B/8C for South Africa
7.	Coin case cover	ER-33CV	For ER-33CC
		ER-33CV1	For ER-33CC1
		ER-38CV1~5	For ER-38CC (key variation)
8.	EXPANSION MEMORY Board	ER-33MB	32KB memory Board with 5 ic sockets
9.	EXPANSION RAM CHIP	ER-01RA	32KB RAM CHIP
10.	in-line system	ER-33MA2	SRN i/F Board + MASTER ROM
		ER-33SL2	SRN i/F Board + SLAVE ROM
11.	on-line system	ER-33RS2	RS232C i/F(2CH) + ROM
12.	FD unit cable level converter	ER-01FD or ER-02FD	Preset Loader
		ER-52CB	Loader cable
		ER-52LC	TTL ↔ RS232C level converter
13.	OPTION Battery	ER-30BT	For South Africa
14.	SCALE i/F	ER-33IF	
15.	SCALE/COIN dispenser i/F	ER-52IF	
16.	SCALE/COIN dispenser, RS-232C i/F	ER-33RI	

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-3337RCZZ	
4.	MODE Key grip cover	LKGIM7126RCZZ	OP only
5.	Water-proof switch cover	GCOVB6872RCZZ	for standard cashier key
		GCOVB6873RCZZ	for ER25CL cashier key
6.	Service Key	LKGIM7113RCZZ	for standard mode Key
		LKGIM7094RCZZ	for ER-25MD/31MD
7.	Water-proof Key cover (ER-3311)	GCOVB6899RCZZ	for normal key board
8.	Character Key cover (ER-3311)	GCOVB6925RCZZ	for normal key board

5-4. Supplies

NO.	NAME	PARTS CODE	DESCRIPTION
1.	Roll paper	DPAPR1006CSZZ	5 rolls/pack
2.	Ink ribbon	PRBN-2320RCZZ	Purple
3.	Ink for stamp	UINK-1001CCZZ	5cc
4.	Key sheet	PSHEZ6720RCZZ	standard Key layout (For ER-3310)
		PSHEZ6700RCZZ	Blank Key sheet (For ER-3310)
		PSHEZ6698RCZZ	character Key sheet (For ER-3310)

6. SRV/PGM mode program list

There are the following programs.

1. User program

- 1-1) Program used in the PGM1 mode (routine operation)
- 1-2) Program used in the PGM2 mode (for machine installation)

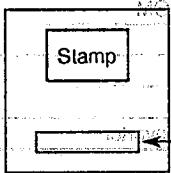
2. Service program

Program used in the SRV mode (service engineering) ... Has a job code in nine hundreds.

You may classify the above in terms of hardware and software.

Noted with a single circle "○" in the table is applicable for the entire ECR and double-circle "◎" for individual function.

6-1. Hardware functions

Item	Function	Choice	Default	Job code	SRV	PGM
Printer	Date-print format	Y/M/D / D/M/Y / M/D/Y	M/D/Y	912A	○	
	Receipt switch	Enable/Disable	Enable	912B	○	
	Header print format	Normal/two lines, w/o cashier and server name/ consecutive number, double size	Normal	912C	○	
	Validation format	Consecutive number/date	Date	913A	○	
	Contents of validation	Sales total/tender amount	Tendered amount	913A	○	
	Amount leading symbol	* / \$	\$	915A	○	
	Journal paper near end sense (sensor as a service option)	Enable/Disable	Disable	915C	○	
	Lock on journal paper near end (sensor as a service option)	Required tape exchange/cancel by CL key	Cancel by CL key	913C	○	
	Logo (message) print format	3 lines/stamp only, w/o message/stamp & footer/6 lines	Stamp only	912D	○	
						
	Register-number setup	3 digits	0	252	○	
	Consecutive-number setup	4 digits	0	253	○	
	Logo (message) setup	21 chrs x 6 block (21 chrs x 6 lines)	Space	254	○	
	Validation frequency	0 ~ 9 (0: disable)	1	255y	○	
	Journal selection	Select/all	All	256D	○	
	Validation paper detection (sensor as a service option)	Enable/Disable	Disable	912D	○	
	Text character select (dept & PLU)	8/12 character	8 character	918B	◎	
Slip printer	Slip printer connection	Connect/not-connected	Not-connected	902C	○	
	Print start position	Column 0 ~ 14	Column 0	904CD	○	
	Print method	AT registration/via buffer	AT registration	911D	○	
	Print contents	Extracted/detailed	Detailed	911D	○	
	Required slip print at PB entry	Required/not required	Not required	919C	○	
	Print start line	0~64	0	255ab	○	
	Maximum print lines	0~99	99	255cd	○	
	Print frequency	0~9 (0: disabled)	1	255z	○	
Kitchen printer	Kitchen printer connection	ER-01RP/ER-02RP/none /ER-01RP + ER-02RP	None	902B	○	
	Refund, return data transmission to kitchen printer	Send/not to send	Send	902C	○	
	Terminal number on the in-line Second kitchen printer	0~255 0 (none), 1 ~ 10	0 0	207		○
	DEPT/PLU TEXT format	Normal/ D.C.	Normal	918C	○	
	Printing of 0-amount PLU on K.P	RED/BLACK	BLACK	918B	○	
	Second K.P mode	Buck up/Duplicate	Buck up	920B	○	
Key-board	Input buffer after a transaction is made	Clear/not to clear	Not to clear	913C	○	
	Choice of error process	Lock error will non-accepted mis-operation/all lock error	All lock error	913D	○	
	Keytouch tone	Enable/Disable	Enable	913D	○	
	Key layout	Function key numbers	Standard	950 951	○	
Mode switch	Void mode function	Enable/Disable	Enable	907D	○	
	Disable OP X/Z mode	Enable/Disable	Enable	256B		○
Drawer	Drawer closing	Required/not required	not required	913D	○	
	Till timer limit	0 ~ 255 seconds	0 second	270	○	

Item.	Function	Choice	Default	Job code	SRV	PGM
Memory	Period of summary	Yes/No	No	971	○	
Others	IRC	Yes/No	No	902A	○	
	RS232C connection	Yes/No	No	902A	○	
	SCALE	Auto/manual	Manual	903	○	
	Scale weighing mode	KG/LB	LB	903c	○	
	Tare input	Enable/Disable	Disable	903c	○	
	SCALE TARE TABLE	0.00~99.99	0	158		○
	Coindispenser	Yes/No	No	903C	○	

6-2. Software functions

Item.	Function	Choice	Default	Job code	SRV	PGM
Depart-ment	Hash dept setup in PGM2 mode	Enable/Disable	Disable	906B	○	
	(-) dept set up in PGM2 mode	Enable/Disable	Disable	906B	○	
	Department counter decimal point position	(Fixed to 2)	2	906D	○	
	Maximum department number	0~99	22, including two promotion dept	971	○	
	Unit price setting	6 digits (0~999999)	0	110		◎
	HASH	Hash/normal	Normal	210A		◎
	Validation print	Required/not required	not required	210C		◎
	SIS	SIF/SIS/single item (normal)	Single item (normal)	210E		◎
	Amount input type choice	Open & preset/preset/open/disable	Open	210F		◎
	Sign	- / +	+	211A		◎
	Food stamp accepted	Enable/Disable	Disable	211B		◎
	Taxable mode	Tax-1/tax-2/tax-1 & tax-2/non-tax	Non-tax	211CD		◎
	HALO	1~9 / 0~7	17	212AB		◎
	TEXT	8 chrs	DPT. xx	214		◎
	Promotion dept setting	Promotion/normal	Normal	210B		◎
	Promotion PLU code setting	5 PLU's maximum	0	215		◎
	Scale input	Enable/Disable	Disable	210D		◎
	Subtotal print format	Subtotal printed/added to subtotal/single linefeed/normal	Normal	213		◎
	Direct dept key code define	1~99		219		◎
	Kitchen printer number	0~10 (0: not to sent, 10: send to receipt)	0	218		◎
PLU/ sub-PLU	Maximum PLU number	0~ (0: disabled)	80	971	○	
	Accessing totalizer for entry of number of registration items for split pricing	Conversion to pack equivalent/individual count	Individual count	905C	○	
	Stock count in credit balance	Disable with error prompt/enable with error prompt only/enable	Enable	906A	○	
	Choice of PLU type	Erase/PLU/ sub-dept/disable	PLU	121a		◎
	Printing a null amount	Yes/No	No	919C	○	
	Pertaining dept setting	1~50	1	121bc		◎
	PLU unit price setting or sub-dept HALO setting	6 digits	0	120		◎
	Scale basic weight manual entry or pack contents for split pricing	2 digits	0	120		◎
	PLU free code setting	4 digits	0	229		◎
	Sign	- / +	+	221A		◎
	Food stamp accepted	Enable/Disable	Disable	211B		◎
	Taxable mode	Tax-1/tax-2/tax-1 & tax-2/non-tax	Non-tax	211CD		◎
	Add to inventory	0~99999	0	122		◎
	TEXT	8 or 12 chars	PLU-XXXX	224		◎
	PLU linking	3 PLU, maximum	0	225		◎
	Group setting	1~15	1	226		◎

Item	Function	Choice	Default	Job code	SRV	PGM
PLU/ sub- PLU	PLU level star/end number	1~9999 each for three levels	level 1: 1, -80 level 2: 81, -160 level 3: 161, -240	227		○
	Shift level	Auto/manual REG + MGR mode/MGR mode only	Auto REG + MGR mode	256A		○
	Kitchen printer number	0~10 (0: not to send, send to receipt)	0	228		◎
	Scale entry	Required/enable/not required/disable	Disable	220		◎
Void	SUB TOTAL VOID	Enable/Disable	Enable	918D	○	
	Specified void	Enable/Disable	Enable	918D	○	
	TEXT	8 chrs	VOID	234		○
	Specified void in REG mode	Enable/Disable	Enable	256A		○
	Last item void in REG mode	Enable/Disable	Enable	256B		○
	Void mode in REG mode	Enable/Disable	Disable	907C	○	
REF- UND	TEXT	8 chrs	REFUND	234		○
	Operation in REG mode	Enable/Disable	Enable	256C		○
	Validation print	Required/not required	Not required	230		○
RE- TURN	TEXT	8 chrs	RETURN	234		○
	Operation in REG mode	Enable/Disable	Enable	256D		○
Cou- pon / dis- count (indivi- dual sett- ing)	Sign	- / +	-	231A		◎
	Food stamp accept	Enable/Disable	Disable	231B		◎
	Taxable mode	Tax-1/tax-2/tax-1 & tax-2/non-tax	Non-tax	231CD		◎
	HALO	1~9 / 0~7	17	232AB		◎
	TEXT	8 chrs	(-)1 (-)2	234		◎
	Coupon kind	Store coupon/vendor coupon	Vendor coupon	236A		◎
% key	ST(-) and ST(%) key strokes within a transaction	One stroke only/any stroke	Any stroke	915C	○	
	Operation key choice	Discount (%) by item/discount (%) by subtotal	Discount (%) by subtotal	235A		◎
	Choice of discount mode	Open & preset/preset/open/disable	Open	238		◎
	Discount rate setting	0.00%~99.99% (preset disabled with 0)	0.00%	130		◎
	Sign	- / +	-	231A		◎
	Food stamp accept	Enable/Disable	Disable	231B		◎
	Taxable mode	Tax-1/tax-2/tax-1 & tax-2/non-tax	Non-tax	231CD		◎
	HALO	0.00%~99.99% (preset disabled with 0)	99.99%	238		◎
	TEXT	8 chrs	%1~%4	234		◎
	Non-add entry (departments except for hash department, PLU/sub-department)	Required/not required	Not required	914C	○	
Non- add	Non-add code entry	For required only/any time	Any time	914B	○	
	At beginning of a transaction	Required/not required	Not required	914B	○	
	Non-add code entry	Enable/Disable	Enable	256A		○
	Choice of maximum input digits	4 / 8 / 12 / 16	16	914C	○	
	Number of balance files	0~999	100	971	○	
Pre- vious bala- nce	Previous balance mode	Manual PB, CB/PB lookup	PB lookup	919A	○	
	Input number check digit	Yes/No	No	919B	○	
	Guest check number, participant number checking	Enable/Disable	Disable	919B	○	

Item.	Function	Choice	Default	Job code	SRV	PGM
Pre-previous balance	Printing header on a slip paper for additional order	Print/Not to print	Print	919A	○	
	Automatic guest number search	Enable/Disable	Disable	919B	○	
	PB/CB entry	Required/not required	Not required	919C	○	
	TEXT	8 chrs	**PBAL **CBAL **SERV	234		⊙
	Guest check number setting	1~9999	0000	295		○
	Guest check number permitted to each server		No setting	242		○
	Choice of account closing method	At each transaction/total of transaction	Total of transaction	256C		○
	Number of guest entry	Required/not required	Not required	256D		○
	PBLU code entry at reorder	Compulsory/non-compulsory	Non-compulsory	919A	○	
	PBLU TAX system	Guest check/change posting	Guest check	919D	○	
Subtotal	Merchandise sales subtotal	Print/skip	Skip	913B	○	
	Taxable subtotal	Print/skip	Skip	913B	○	
	Tray subtotal	Required/not required	Not required	916C	○	
	Tax computation at tray subtotal	Compute/not to compute	Not to compute	916D	○	
	TEXT	8 chrs	TRAY TL SUBTOTAL MDSE ST EAT IN1~3	234		⊙
	Paper feed after tray subtotal	0~9	0	255x		○
	Eat in subtotal tax delete	No tax delete/tax-1/tax-2/tax-1 & tax-2	No tax delete	260FG		○
Tax function	MANUAL TAX	Enable/Disable	Enable	914D	○	
	HALO	1~9 / 0~7	17	232AB		○
	TEXT (MANUAL TAX)	8 chrs	M-TAX	234		○
	Local mode	Singapore/normal	Normal	901C	○	
	TAX TABLE 1	98 steps	(112 steps altogether)	240		○
	TAX TABLE 2	98 steps				
	Tax rate(%)-1	6 digits (0~99.9999)	0	241		○
	Tax rate(%)-2	6 digits (0~99.9999)	0			
	Text (taxable amount)	8 digits	TAX1 ST TAX2 ST	234		⊙
	Text (tax amount)	8 chrs	TAX 1 TAX 2	234		⊙
	TAX DELETE	Enable/Disable	Disable	914A	○	
	Printing when tax is 0	Print/skip	Skip	913A	○	
Foreign currency conversion	Printing conversion subtotal	Print/Not to print	Print	919D	○	
	Conversion rate	0.000%~999.999%	0.000%	130		○
	TEXT	8 chrs	CONV	234		○
Cash, check charge	Printing footer at closing	When denomination key is pushed/all receipts	All receipts	912C	○	
	Slip printing	Required/not required	Not required	260B		⊙
	Validation printing	Required/not required	Not required	260C		⊙
	Non-add code entry	Required/not required	Not required	260D		⊙
	Non-add code entry digits	4 / 8 / 12 / 16	16	260E		⊙
	Choice of taxing mode	Tax-1/tax-2/tax-1 & tax-2/no tax	Tax-1 & tax-2	260FG		⊙
	Footer printing	Print/skip print	Print	260H		⊙
	Subtotal display	Required/not required	Required	260I		⊙
	Change	Enable/Disable	Enable	260J		⊙
	Under tendered amount	Enable/Disable	Enable	260K		⊙
	Entry of tendered amount	Required/not required	Not required	260L		⊙
	Opening drawer	Opens/Does not open	Opens	260M		⊙
	HALO	1~9 / 0~8	18	262		⊙
	TEXT	8 chrs	CASH, CASH2 CHECK CHARGE1~5	234		⊙

Item	Function	Choice	Default	Job code	SRV	PGM
Cash, check charge	Non-add code entry at cashing check	Required/not required	Not required	230A		○
	HALO for change to check	0.00~999999.99	999999.99	261		○
	Check validation message print	21 chrs x 3 lines	1st line: No 2nd line: No 3rd line: for deposit only	274		○
	Checking for required non-add entry, kitchen printer which prints every charge	0~9 (0: no output) 10: Printed on receipt (chit sheet)	0	237		◎
Food stamp	Type of food stamp	Tax forgiveness/tax payment with food stamp/tax payment with cash/no food stamp	No food stamp	903D	○	
	Food stamp subtotal before tendering	Required/not required	Not required	260A		○
RA	Payment method	Cash only registration /compound registration	Compound registration	915C	○	
	Validation printing	Required/not required	Not required	230A		○
	HALO	1~9 / 0~8	18	232AB		○
	TEXT	8 chrs	***R / A	234		○
PO	Validation printing	Required/not required	Not required	230A		○
	HALO	1~9 / 0~8	18	232AB		○
	TEXT	8 chrs	***P / O	234		○
No-sale	No-sale after entry of a non-add code	Enable/Disable	Enable	914B	○	
	Receipt issued at No-sale	Yes/No	Yes	914A	○	
Employee server Cashier	Server, cashier, manager code display mode	Displays/not to display	Not to display	910B	○	
	Cashier, server, manager-password entry	Required/prohibited	Prohibited	910B	○	
	Employee TIME IN ENTRY	Required/not required	Not required	910C	○	
	Merchandise total by cashiers	Tax inclusive/net sales	Net sales	910A	○	
	Cashier assignment	Required/not required	Not required	910B	○	
	Cashier key type	Barrel lock/push button type	Push button type	910D	○	
	Cashier A~E entry	Code entry/hardware change	Hardware change	910D	○	
	Choice of number of cashiers	0~4	4	971	○	
	Cashier number setting	2 digits (1~99)	No setting	151		◎
	Cashier name setting	8 chrs	Space	154		◎
	Cashier drawer number setting	0~4 (0: not to open)	0	259		◎
	Merchandise subtotal by servers	Tax inclusive/net sales	Net sales	910A	○	
	Server number entry	Required/not required	Not required	910C	○	
	Choice of server number	0~99	15	971C	○	
	Server number setting	2 digits (1~99)	No setting	141		◎
	Server name setting	8 chrs	Space	144		◎
	Manager number entry	Required/not required	Not required	910C	○	
	Manager number setting	2 digits (1~99)	No setting	245		◎
TIP	Entry mode	POOL / INDIVIDUAL	INDIVIDUAL	918B	○	
	Type of entry	Fixed rate/amount	Amount	256B		○
	Rate of tip	0.00%~99.99%	0.00%	130		○
	HALO	1~9 / 0~7	17	232AB		○
	TEXT	8 chrs	TIP IN TIP PAID	234		○
	Validation print	Required/not required	Not required	230		○
Timer clock	Mode	24 hours/12 hours	12 hours	912B	○	
	Date setting	6 chrs	010100	250		○
	Time setting using 24 hours system	4 digits (0 = 2359)	0000	251		○
Others	Fractional disposal	Round down/round up/round off	Round off	911A	○	
	PGM2 mode program password setting	4 digits	000000	944		○

Item.	Function	Choice	Default	Job code	SRV	PGM
Others	PGM1 mode program password setting	4 digits	0	280		○
	Lock error beep	2-second beep/continuous until canceled	2-second beep	913C	○	
	PGM setting of SRV mode prohibited function	Enable/Disable	Disable	909C	○	
	Sentinel amount setting	8 digits	999999.99	257		○
	Kitchen printer text (printed on chit)	8 chrs	Space	208		◎
	Chit receipt	Yes/No	No	918C	○	
Reports	GT1 print on Z report	Print/skip print	Print	908A	○	
	GT2 print on Z report	Print/skip print	Print	908A	○	
	GT3 print on Z report	Print/skip print	Print	908A	○	
	GT1 print on X report	Print/skip print	Print	908B	○	
	Department zero skip on X/Z report	Yes/No	Yes	909A	○	
	PLU zero skip on X/Z report	Yes/No	Yes	909A	○	
	Transaction zero skip	Yes/No	Yes	909A	○	
	Hourly report zero skip	Yes/No	Yes	909B	○	
	Sales share print on department report	Print/skip print	Print	909C	○	
	Prohibit print on X/Z report					
	Coupon type PLU totalizer	Print/skip print	Skip print	917A	○	
	Net sales subtotal	Print/skip print	Print	917A	○	
	Check change total	Print/skip print	Print	917A	○	
	Taxable-1, taxable-2 subtotal	Print/skip print	Print	917BC	○	
	Gross tax1, tax2 total and refund tax1, tax2 total	Print/skip print	Print	917BC	○	
	NET TX1,2 TTL	Print/skip print	Print	917BC	○	
	TOTAL TAX AMOUNT	Print/skip print	Print	917D	○	
	Gross manual tax and refund manual tax	Print/skip print	Skip print	917D	○	
	NET MANUAL TAX TTL	Print/skip print	Skip print	917D	○	
	Printing sales total by denomination on cash report	Print/skip print	Print	918A	○	
	Printing tip total on report by servers	Print/skip print	Skip print	918B	○	
	Cumulative report count default setting					
	Z1	4 digits (0~9999)	0	930	○	
	Z2	4 digits (0~9999)	0	931	○	
	TAX	4 digits (0~9999)	0	932	○	
	Hourly	4 digits (0~9999)	0	933	○	
	PLU	4 digits (0~9999)	0	934	○	
	Cashier	4 digits (0~9999)	0	935	○	
	Balance file	4 digits (0~9999)	0	936	○	
	Server	4 digits (0~9999)	0	937	○	
	GT2 setting	13 digits (0~999999999999)	0	942	○	
	GT3 setting	13 digits (0~999999999999)	0	943	○	
	Resetting consecutive number at Z2	Yes/No	No	908C	○	
	Resetting consecutive number at Z1	Yes/No	No	908C	○	
	Denomination subtotal print format on general report	Print subtotal/add to subtotal/single line feed/normal	Normal	263		○
	Z1 mode password	4 digits (0~9999)(0: password entry not required)	0	281		○
	Z2 mode password	4 digits (0~9999)(0: password entry not required)	0	282		○
	Zero suppressing specific report within PLU	Yes/No	Yes	256C		○
	Zero suppressing PLU group report	Yes/No	Yes	256D		○
	Stack report setting	10 reports, maximum	No setting	286		○

Item	Function	Choice	Default	Job code	SRV	PGM
IRC	Machine assignment	Stand alone/Slave/Master	Stand alone	920D	☐	
	Second K.P. mode	Back up/Duplicate	Back up	920B	☐	
	PGM-mode programming at the slave	Enable/Disable	Disable	920C	☐	
	SRN transmission speed and carrier-off waiting time	•Transmission speed 1MBPS/480KBPS •Carrier-OFF waiting Time 3.2~12.8msec(480K) 1.6~6.4msec(1M)	1MBPS 6.4msec	922	☐	
	Back up master for Guest check	Yes/No	No	924A	☐	
	Entire system general Z1 (#71) by master	Resets the current sales along with those already individually reset / Resets only those already individual reset	Resets the current sales along with those already individually reset	925A	☐	
	Automatically clear individual reselling memory at #71	Clear / not clear	Clear	925A	☐	
	Perform #99 (clear individual reselling memory) before executing system general Z1 (#71)	Disable/Enable	Disable	925A	☐	
	General resetting while a slave machine is sign-on	Enable/Disable	Disable	925B	☐	
	Registration until #99 is executed after doing general Z1 (#1) (#71)	Enable/Disable	Disable	925B	☐	
	Individual resetting (#1, #2, #4, #20, #40) at each terminal	Enable/Disable	Disable	925B	☐	
	Consolidation report format	Consolidation report only / Report for each machine only / consolidation + each machine	Consolidation + each machine	925C	☐	
	Individual reselling memory clear at open store	To clear / not to clear	To clear	925D	☐	
	Reset (All Z Job) at open store	Disable/Enable	Disable	925D	☐	
	Terminal number	0 to 254	0	310	☐	
	Machine list	Terminal number and Register number	No setting	311	☐	
	Delete a machine from master list	Register number		312	☐	
	Manager retry function	Enable / disable	Enable	331	☐	
	Manager file	Centralized / individual	Centralized	341	☐	
	Back up master setting	Terminal # (0~254)	0	313	☐	
RS-232C	Down loading preset data	Enable / disable	Enable	390A	☐	
	Sending transaction data and preset data	Enable / disable	Enable	390B	☐	
	RJE (Remote Job entry)	Enable / disable	Disable	390C	☐	
	Receiving Z command at stand alone machine	Enable / disable	Enable	390E	☐	
	Electronic mail function	Enable / disable	Enable	390F	☐	
	Sending consolidation buffer RAM data	Enable / disable	Disable	390D	☐	
	Sending report print data	Enable / disable	Enable	390G	☐	
	Sending All print data	Enable / disable	Disable	390H	☐	
	On-line host / slave assignment	Host / slave	slave	391A	☐	
	ER-OFF Time	10 x n sec	0	391B	☐	
	On-line slave terminal number	01~99	01	391C	☐	
	Start code / End code setting	ASCII	Start: 002 End: 013	392	☐	
	Transmission protocol selection	Using modem / Not using modem with Non-protocol / Not using modem with a protocol	Not using modem with a protocol	393A	☐	
	Assignment of slave terminal number to be received auto-matical ER-OFF command	Slave terminal number (01~99)	No setting	394	☐	
	Individual reset for on-line	Enable / disable	Enable	395A	☐	
	Issuing report by the ECR side while the in-line reset Job is being carried out by RJE	Enable / disable	Enable	395B	☐	

7.SRV (SERVICE) MODE

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

7-1 SRV. reset (Program Loop Reset)

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

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.

*** SRV.RESET ***

7-2 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

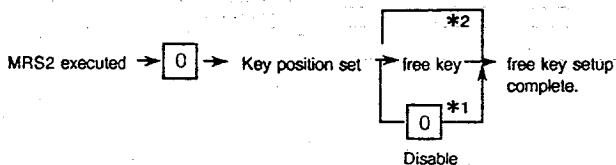
- 1) Disconnect the AC cord from the wall outlet.
- 2) Set the MODE switch to the SRV position
- 3) Connect the AC cord to the wall outlet, while depressing the RECEIPT FEED key and the JOURNAL FEED key.

*** MRS.RESET ***

*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	Numeric key "000"
4	Numeric key "3"	13	Decimal point key
5	Numeric key "4"	14	CL key
6	Numeric key "5"	15	@/FOR key
7	Numeric key "6"	16	#/SBTL key
8	Numeric key "7"	17	CA/AT key
9	Numeric key "8"		

7-3 Reading of the SRV mode program

[JOB code 900]

All parameters contained for the SRV mode as listed

Key operation.

900→[@/FOR]→[CA/AT]

Service
Preset

Z1, Z2
counters

GTs

PGM2-mode
Secret code

01/01/00 12:01AM
000#0002

#900

901# 0002
902# 0010
903# 0000
904# 0000
905# 0000
906# 0002
907# 0000
908# 0000
909# 0000
910# 0000
911# 0001
912# 0001
913# 0124
914# 0100
915# 0060
916# 0700
917# 4003
918# 4000
919# 0001
920# 0000
921# 0000
922# 0000
923# 0000
924# 0000
925# 0000
930# Z1 0000
931# Z2 0000
932# Z2 0000
933# Z1 0000
934# Z1 0000
935# Z1 0000
936# Z1 0000
937# Z1 0000

GT1 \$0000000000.00
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]

#950	Key	Position	#951	Key	Position
001	0 KEY	119	001	001	104
002	1 KEY	120	002	002	105
003	2 KEY	130	003	003	106
004	3 KEY	140	004	004	107
005	4 KEY	121	005	005	108
006	5 KEY	131	006	006	114
007	6 KEY	141	007	007	115
008	7 KEY	122	008	008	116
009	8 KEY	132	009	009	117
010	9 KEY	142	010	010	118
011	00 KEY	129	011	011	124
012	000KEY	---	012	012	125
013	. KEY	139	013	013	126
014	CL	143	014	014	127
015	@/FOR	133	015	015	128
016	#/SBTL	150	016	016	134
017	CA/AT	149	017	017	135
018	CASH2	153	018	018	136
019	SCALE	058	019	019	137
020	PLU	093	020	020	138
021	TS OUT	---	021	021	095
022	TS IN	---	022	022	094
023			023	023	001
024			024	024	010
025			025	025	019
063	TIP	090	150	150	---
064	PRINT	038	151	151	---
065	RCPT	048	152	152	---
066	SLIP	028	153	153	---
067	EAT 1	---	154	154	---
068	EAT 2	---	155	155	---
069	EAT 3	---	156	156	---
070	FINAL	---			

Key number

Key text

Key position number

Key position number

[ER-3310]

[JOB code 970]

Files on the memory are listed.

Key operation

970 → [@/FOR] → [CA/AT]

#970	Table #	Record count	Block count	used record count
%01%	00022	/00022		
%02%	00073	/00073		
%03%	00012	14/00012		
%04%	00020	04/00020		
%05%	00048	/00048		
%06%	00014	/00014		
%07%	00004	/00004		
%08%	00080	/00019		
%09%	00073	/00073		
%15%	00100	/00000		
%16%	00099	/00099		
%17%	00009	/00009		
BANK 07 2FFA				
Address number of top of vacant memory				

[JOB code 995]

Sio handler initial values are listed.

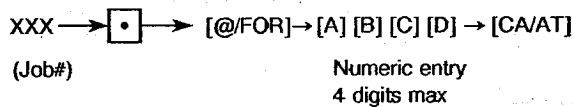
Key operation

995 → [@/FOR] → [CA/AT]

#995	Transmission	Parameter	Baud rate	Data format	Start code	End code
SUM CHECK	Y					
END CODE	Y					
START CODE	N					
CD SENSE	Y					
CS SENSE	Y					
DR SENSE	Y					
			9600			
			7 000 1			
START CODE	00					
END CODE	00					

7-4 Service mode programming

The following are the key operation required for programming.



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

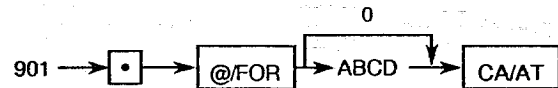
Key entry without depression of  key will affect the programmed contents.

[List of service mode program]

Job

- 901 TAX system, TAB setting
- 902 Option setting,
- 903 SCALE setting, Food stamp system, coin dispenser setting.
- 904 Slip print shifting digits
- 905 Split registration
- 906 STOCK counter, HASH/MINUS DEPT programming,
- 907 Void mode programming
- 908 REPORT programming
- 909 REPORT programming
- 910 Cashier/Server/employee programming
- 911 Fractional disposal/SLIP print program
- 912 Date format, Receipt on/off switch, Time display, Receipt header format, Footer control, VP sensor, Logo format
- 913 Print format, NE check programming, Error beep, Key buffer clear, drawer close operation, error mode, Key catch tone.
- 914 No sale programming, Tax deletion, non-add programming manual TAX.
- 915 Amount reading symbol, NE check, discount, RA
- 916 Negative ST, TRYST programming
- 917 REPORT programming
- 918 Cashier report format, DEPT/PLU TEXT characters, TIP method, chit receipt, void programming, kitchen printer printing edit/no.
- 919 PBLU method, PBLU programming, amount printing when PLU unit price is 0, conversion SBTL print
- 920 In-line setting (1)
Second KP mode, PGM mode can be enable / disable at slave, machine assignment
- 922 In-line setting (2)
SRN transmission speed and carrier-off waiting time
- 924 In-line setting (3)
Back up master Yes / No
- 925 In-line setting (4)
Resetting mode selection
- 930 counter setting
{
- 937
- 942 GT2 Setting
- 943 GT3 Setting
- 944 PGM2 Secret code Setting
- 950 Free Key layout Setting (1)
- 951 " (2)
- 971 File creation

<JOB # 901>
Key operation



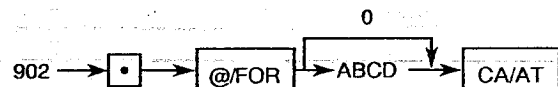
- A. -Always 0
B. -Always 0
C. -TAX system

TAX SYSTEM	C
SALES TAX	0
SINGAPORE TAX	4

D. -TAB = Set at 2

MRS = 0002

<JOB # 902>
Key operation



A.

- 1. Choice of RS232C option
- 2. Choice of SRN option

RS-232C	INLINE (SRN)	A
NO	NO	0
	YES	1
YES	NO	2
	YES	3

B. --Choice of KITCHEN PRINTER

Kitchen printer	B
NONE	0
ER-02RP	1
ER-01RP	2
ER-02RP and ER-01RP	3

C. -1. REFUND, RETURN data to send to the kitchen printer
Yes/No

- 2. Choice of slip printer Yes/No

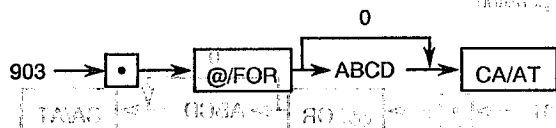
RF/RTN data	Slip printer	C
transmit	NO	1
	YES	3
not transmit	NO	5
	YES	7

~~D. -Always 0~~

MRS =.0010

* SRV reset must be performed after any changes to this Job code.

<JOB # 903>



- A. -Always 0
B. Choice of coin dispenser

Coin dispenser	B
No	0
Yes	1

- C. -1. Scale Auto/Manual
-2. Tare input Enable/Disable
-3. Scale weighing unit KG/LB

Scale	Tare input	Weighing unit	C
Manual	Disable	LB	0
		KG	1
	Enable	LB	2
		KG	3
Automatic	Disable	LB	4
		KG	5
	Enable	LB	6
		KG	7

D. -FOOD STAMP SYSTEM

Food stamp	D
No food stamp	0
Tax payable by food stamp	1
No tax payable by food stamp	2
Food stamp forgiveness	3

MRS = 0000

<JOB # 904>

Key operation



- A. -Always 0
B. -Always 0
C D. -SLIP Printer number of digits shifted = 0 ~ 14

MRS = 0000

<JOB # 905>

Key operation



- A. -Always 0
B. -Always 0
C. -Split item quantity count method

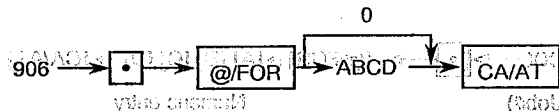
	C
QUANTITY	0
PACKAGE	1

D. -Always 0

MRS = 0000

<JOB # 906>

Key operation



- A. -Credit figure in stock counter

Enabled unconditionally	0
Operation enabled though error displayed	1
Disable	2

- B. -1. Enable/Disable hash dept setting by PGM2
-2. Enable/Disable (-) dept setting by PGM 2

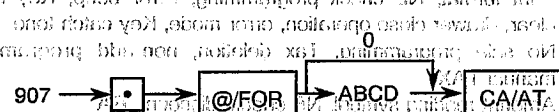
Hash DEPT	(-) dept	B
Disable	Disable	0
	Enable	1
Enable	Disable	2
	Enable	3

- C. -Always 0

- D. - Dept decimal point position (Always 2)
MRS = 0002

<JOB # 907>

Key operation



- A. -Always 0
B. -Always 0
C. -Enable/Disable void mode in REG position

Void mode in REG position	D
Disable	0
Enable	2

- D. -Enable/Disable void mode

Void mode	D
Enable	0
Disable	2

MRS = 0000

<JOB # 908>

Key operation



- A. -1. GT1 PRINT SKIP in Z report
2. GT2 PRINT SKIP in Z report
3. GT2 PRINT SKIP in Z report

GT1	GT1	GT3	A
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

- B. -GT1 PRINT in X REPORT

GT1 in X report	B
Skip	0
Print	4

- C. -1. Yes/No to reset consecutive number (for Z2)
-2. Yes/No to reset consecutive number (for Z1)

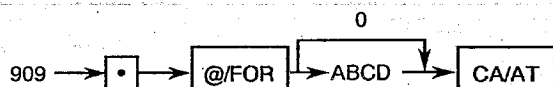
CC# reset at Z2	CC# reset at Z1	C
Non reset	Non reset	0
	Reset	1
Reset	Non reset	2
	Reset	3

- D. -Always 0

MRS = 0000

<JOB # 909>

Key operation



- A. -1. TRANSACTION REPORT ZERO SKIP Yes/NO
2. DEPARTMENT REPORT ZERO SKIP Yes/NO
3. PLU(STOCK) REPORT ZERO SKIP Yes/No

Transaction report	DEPT report	PLU(stock) report	A
Zero skip	Zero skip	Zero skip	0
		Non Zero skip	1
	Non Zero skip	Zero skip	2
		Non Zero skip	3
Non Zero skip	Zero skip	Zero skip	4
		Non Zero skip	5
	Non Zero skip	Zero skip	6
		Non Zero skip	7

- B. -HOURLY REPORT ZERO SKIP Yes/No

Hourly report	B
Zero skip	0
Non skip	4

- C. -1. Print/skip to print share on dept report
-2. Refer/skip to refer to prohibit conditions by PGM setting and report *

Printing share	Refer to prohibit condition	C
Print	Yes	0
	No	1
Skip	Yes	2
	No	3

*NOTE)

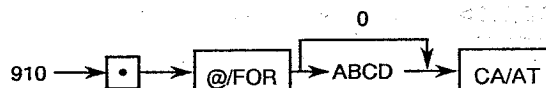
"If a function is inhibited in SRV programming, any PGM programming relating to that function can be allowed or disallowed depending on the presetting of SRV 909,C. For example, if the RFND function is inhibited in SRV 950, any related PGM programming, such as PGM 230, can still be performed if SRV 909,C, is set to Code 1, to allow it".

- D. Always 0

MRS = 0000

<JOB # 910>

Key operation



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

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

- B. -1. Compulsory/Non compulsory cashier, server code entry
2. Appear/Hidden cashier, server, manager entry on display
3. Compulsory/non compulsory cashier entry (cashier assign)

Secret code entry	Display	Cashier# entry	A
Disable	Hidden	Non compulsory	0
		Compulsory	1
	Appear	Non compulsory	2
		Compulsory	3
Compulsory	Hidden	Non compulsory	4
		Compulsory	5
	Appear	Non compulsory	6
		Compulsory	7

C. -1. EMPLOYEE TIME IN operation Compulsory/non compulsory

2. SERVER # entry Compulsory/non compulsory
3. MANAGER # entry Compulsory/non compulsory

Employee time in	Server# entry	Manager# entry	A
Non compulsory	Non compulsory	Non compulsory	0
	Compulsory	Non compulsory	1
	Compulsory	Compulsory	2
Compulsory	Non compulsory	Non compulsory	3
	Compulsory	Non compulsory	4
	Compulsory	Compulsory	5
Compulsory	Compulsory	Non compulsory	6
	Compulsory	Compulsory	7

D. -1. Choice of BARREL LOCK or STAY DOWN for CASHIER KEY

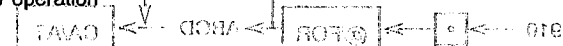
2. Choice of code or hardware key for cashier identification

Cashier key	Cashier ID	A
Stay down switch	Hardware Key	0
	Code entry	1
Barrel Lock key	Hardware Key	4
	Code entry	5

MRS = 0000

<JOB # 911>

Key operation



A. -Choice of fractional rounding

Rounding	A
Round off	0
Round up	1
Round down	2

B. -Always 0

C. -Always 0

D. -1. Choice of Slip print format

2. Choice of slip print method

Slip format	Slip method	D
Full detail format	Buffered	0
	Real time	1
Simplified format	Buffered	4
	Real time	5

SLIP detail format

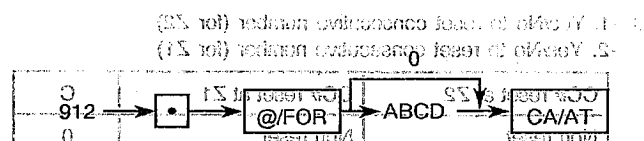
01/01/00 12:17AM 000#0009	A
DPT.01	\$20.00
DPT.03	\$3.00
DPT.07	\$6.00
DPT.17	\$5.00
DPT.20	\$6.00
DPT.09	\$5.00
CASH	\$45.00

Simplified format

01/01/00 12:18AM 000#0011	A
CASH	\$45.00

<JOB # 912>

Key operation



A. -Choice of date format

Date format	A
Month/day/year	0
Day/month/year	1
Year/month/day	2

B. -1. Choice of receipt on/off switch active/inactive

- 2. Choice of calendar timer display type 24 hours/12 hours

Receipt on/off SW	Time display	B
Valid	12 hours	0
	24 hours	1
Invalid	12 hours	2
	24 hours	3

C. -1. Choice of RECEIPT HEADER LINE FORMAT

- 2. Choice of specific key/any key for footer print control

header line format	Footer print control	D
normal	Any key	0
	Specific key	1
Double size	Any key	2
	Specific key	3
2 lines	Any key	4
	Specific key	5

D. -1. Choice of validation paper sense enable or disable*

-2. LOGO MESSAGE CONTROL 0 : 3 LINE

1 : STAMP ONLY
2 : LOGO(FOOTER)
3 : 6 LINES

VP paper sense	Logo message format	D
Disable	3 LINES	0
	Stamp only	1
	Logo/footer	2
	6 lines	3
Enable	3 lines	4
	Stamp only	5
	Logo/footer	6
	6 lines	7

*NOTE) When slip printer is connected, the paper is sensed always.

MRS = 0001

<JOB # 913>

Key operation



A. -1. Choice of tax print when TAXBL ST = 0

2. Validation print format (1) or (2)

Format(1) : Serial NO, machine NO, cashier name, cashier code, and amount are printed.

Format(2) : Date, time, and amount are printed.

3. Choice of total amount only/tendered amount for total validation print

Tax print	VP format	Total VP	A
NO	Date/time	Tendered amount	0
		Total amount	1
	M-No/C-No	Tendered amount	2
		Total amount	3
YES	Date/time	Tendered amount	4
		Total amount	5
	M-No/C-No	Tendered amount	6
		Total amount	7

B. -1. Choice of subtotal print

2. Choice of MDSE ST print

Subtotal print	MDSE ST print	B
Skip*	Skip*	1
	Print	3
Print	Skip	5
	Print	7

Note*: Not printed upon depression of the SBTL or MDSE ST key in the skip mode, but they are displayed.

C. -1. Enable/disable of the [CL] key to clear journal paper near end sensor check error.

2. Choice of continuous beep/2-second beep on error

3. Choice of key buffer clear at the termination of a transaction.

Near end clear	Beep	Key buffer clear	C
Enable	Continuous	Cleared	0
		Not cleared	1
	2-second off	Cleared	2
		Not cleared	3
Disable	Continuous	Cleared	4
		Not cleared	5
	2-second off	Cleared	6
		Not cleared	7

D. -1. Noncompulsory/compulsory registration with drawer closed

2. Misoperation error

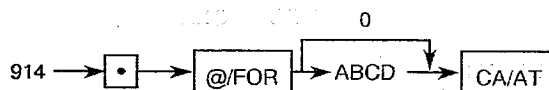
3. Choice of key catch tone generation

Drawer closed	Error action	Catch tone	D
Noncompulsory	All lock	Yes	0
		No	1
	lock and one shot	Yes	2
		No	3
Compulsory	All lock	Yes	4
		No	5
	lock and one shot	Yes	6
		No	7

MRS = 0124

<JOB # 914>

Key operation



A. -1. Choice of receipt issuance at no sale

Enable/disable no sale

Enable/disable tax deletion

No sale receipt	No sale operation	Tax deletion	A
Yes	Enable	Disable	0
		Enable	1
	Disable	Disable	2
		Enable	3
No	Enable	Disable	4
		Enable	5
	Disable	Disable	6
		Enable	7

- B. -1. Non-add entry only when compulsory/any time
 2. Non compulsory/compulsory entry of a non-add entry at the beginning of transaction
 3. Enable/disable no sale(change registration) after a non-add entry

Non-add entry	Non-add before	No sale after a non-add entry	B
Enable at any time	Non compulsory	Enable	0
		Disable	1
	Compulsory	Enable	2
		Disable	3
Only when compulsory	Non compulsory	Enable	4
		Disable	5
	Compulsory	Enable	6
		Disable	7

- C. -1. Compulsory/non compulsory non-add entry for PLU and DEPT only

- 2. Choice of number of digits for non-add (4/8/12/16 digits)

Non-add item entry	Non-add digits	C
Non compulsory	16 digits	0
	12 digits	1
	8 digits	2
	4 digits	3
Compulsory	16 digits	4
	12 digits	5
	8 digits	6
	4 digits	7

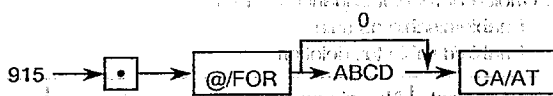
- D. -Enable/disable manual TAX

Manual TAX entry	D
Enable	0
Disable	4

MRS = 0100

<JOB # 915>

Key operation



- A. -Amount leading symbol

Amount leading symbol	A
\$	0
*	2

- B. -Always 0

- C. -1. Choice of paper near end check of journal.
 2. Choice of discount \$/% number limit per transaction.
 3. Choice of direct/tendering mode for received on account.

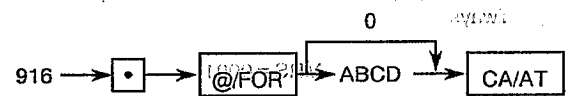
Paper NE check	ST discount \$/%	RA	A
YES	Any time	Tendering	0
		Direct	1
	Single time only	Tendering	2
		Direct	3
NO	Any time	Tendering	4
		Direct	5
	Single time only	Tendering	6
		Direct	7

- D. -Always 0

MRS = 0060

<JOB # 916>

Key operation



- A B. -Always 0, 7

- C. -1. Disable/enable negative MDSE ST.

2. Compulsory/non compulsory TRY ST

Negative MDSE ST	TRY ST	C
Enable	Non compulsory	0
	Compulsory	1
Disable	Non compulsory	4
	Compulsory	5

(only compulsory after first TRY ST)

- D. -TAX calculation at TRY ST

TAX calculation at TRY ST	D
No	0
Yes	4

MRS = 0700

<JOB # 917>

Key operation



- A. -1. Print or skip print of COUPON PLU in X/Z REPORT

2. Print or skip print of NET SALES SUBTOTAL in X/Z REPORT

3. Print or skip print of CHANGE TTL in X/Z REPORT

Coupon PLU	Net sales subtotal	Check change total	A
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

- B. -1. Print or skip print of TAXABLE 1 SUBTOTAL in X/Z REPORT
 2. Print or skip print of GROSS TX1 & REFUND TX1 TTLS in X/Z REPORT
 3. Print or skip print of NET TX1 TTL in X/Z REPORT

Taxable 1 subtotal	Gross TX1 & Refund TX1 totals	Net TX1 total	B
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

- C. -1. Print or skip print of TAXABLE 2 SUBTOTAL in X/Z REPORT
 2. Print or skip print of GROSS TX2 TTLS in X/Z REPORT
 3. Print or skip print of NET TX2 TTL in X/Z REPORT

Taxable 2 subtotal	Gross TX2 & Refund TX2 totals	Net TX2 total	C
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

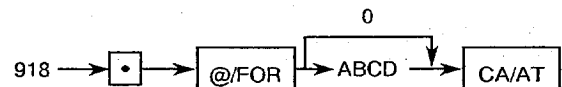
- D. -1. Print or skip print of TOTAL TAX AMOUNT in X/Z REPORT
 2. Print or skip print of GROSS MANUAL TAX in X/Z REPORT
 3. Print or skip print of NET MANUAL MTAX TTL in X/Z REPORT

Total TAX amount	Gross TAX & Refund TAX totals	Net manual TAX total	D
Print	Print	Print	0
		Skip	1
	Skip	Print	2
		Skip	3
Skip	Print	Print	4
		Skip	5
	Skip	Print	6
		Skip	7

MRS = 4003

<JOB # 918>

Key operation



- A. -1. Cashier detail (by denomination)/simplified report format (media totals)
 2. DEPT and PLU TEXT 12 characters/8 characters

Cashier report	DEPT/PLU TEXT	A
Simplified format	8 characters	0
	12 characters	1
Full detail format	8 characters	4
	12 characters	5

- B. -1. Choice of TIP method.
 2. Printing of 0-amount PLU on the Kitchen printer RED/BLACK.
 3. Choice of print or not TIP total in server report.

TIP method	Printing of 0-amount PLU on K. P.	TIP total	B
Individual	BLACK	Skip	0
		Print	1
	RED	Skip	2
		Print	3
Pool	BLACK	Skip	4
		Print	5
	RED	Skip	6
		Print	7

- C. -1. Choice of chit receipt
 -2. Choice of editing print or not at kitchen printer
 -3. Choice of double character or normal printing of DEPT/PLU text at kitchen printer.

Chit receipt	Kitchen print	DEPT/PLU TEXT	CA/AT
No. 0	Edit	Normal	0
1		D.C.	1
2	No.	Normal	2
3		D.C.	3
4	Edit	Normal	4
5		D.C.	5
6	No.	Normal	6
7		D.C.	7

D.C. = Double size character

D. -1. Enable/Disable SUBTOTAL VOID

2. Enable/Disable past item Void with VOID key

Subtotal void	Past item void with void key	D
Enable	Enable	0
	Disable	1
Disable	Enable	2
	Disable	3

MRS = 4000

<JOB # 919>

Key operation

919 →

@/FOR

ABCD

CA/AT

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	CA/AT	D
PB LOOK UP	Print	Non-compulsory	0
		Compulsory	1
	Skip	Non-compulsory	2
		Compulsory	3
Manual	Print	Non-compulsory	4
PB/CB		Compulsory	5
	Skip	Non-compulsory	6
		Compulsory	7

B. -1. Check/Not to check server handling guest check

2. Check/Not to check C/D at PB, CB entry
3. Choice of manual/auto generation GUEST check number

SERVER No.	Check digits	Guest check No.	PB/CB
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

C. -1. Slip print compulsory/non compulsory at guest check registration

2. Choice of compulsory/non compulsory PB/CB registration
3. Choice of amount print or skip print when PLU unit price is 0

Slip in Guest	PB/CB	Amount print	D
Non-compulsory	Non-compulsory	Skip	0
		Print	1
	Compulsory	Skip	2
		Print	3
Compulsory	Non-compulsory	Skip	4
		Print	5
	Compulsory	Skip	6
		Print	7

D. -1. Choice of print or skip print CONVERSION SUBTOTAL.

- 2. PBLU system selection charge posting balance system/ guest check balance system.

Conversion SBT	PBLU system	D
Print	Guest check	1
	Charge posting	3
Skip	Guest check	5
	Charge posting	7

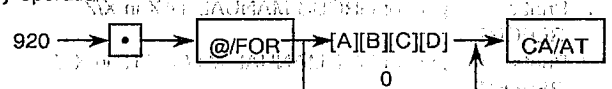
Guest check Charge posting Guest check BALANCE SYSTEM Charge posting BALANCE SYSTEM

MRS = 0001

<JOB# 920> IN-LINE SETTING (1)

More detail of Job# 920~925 and 899, Refer to ER33MA/SL service manual. (00ZER33OPSM2E)

Key operation



MRS = 0000

#920-A : Not used. fixed to 0.

#920-B : Second kitchen printer mode

Second KP	Parameter [B]
Back up	0
Duplicate	2

#920-C : PGM mode can be enable/disable the slave unit in the in-line mode.

Programming by the slave unit	Parameter [C]
Disabled	0
Enabled	1

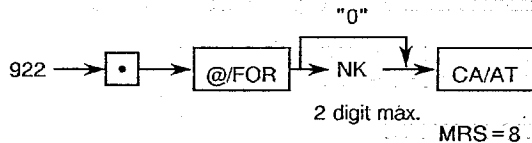
#920-D : Machine assignment setup (master/slave/stand alone)

Assignment	Parameter [D]
Standalone	0
Slave	1
Master	2

<JOB# 921> NOT USED

<JOB# 922> IN-LINE SETTING (2)

SRN transmission speed and carrier-off waiting time



Transmission speed	Carrier-off waiting time (mSec)	Parameter
480K BPS	3.2	1
	6.4	2
	9.6	4
	12.8	0
1M BPS	1.6	9
	3.2	10
	4.8	12
	6.4	8

<JOB# 923> NOT USED

<JOB# 924> IN-LINE SETTING (3)

Back up master for guest check Yes / No

0000

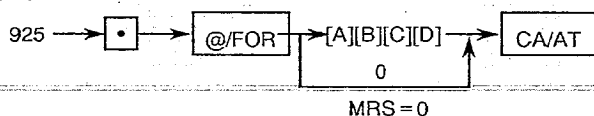
```

    graph LR
      924 --> Box1[ ]
      Box1 --> Box2[@/FOR]
      Box2 --> A000[A000]
      A000 --> Box3[CA/AT]
  
```

Back up master	Parameter [A]
NO	0
YES	1

<JOB# 925> IN-LINE SETTING (4)

Key operation



- #925-A :
1. Master consolidation report mode
 2. YES/NO to automatically clear individual resetting memory at #71.
 3. ENABLE/DISABLE #99 when #71 in not executed.

Consolidation report	Clear save memory at #71	#99 when #71 is not executed	Parameter [A]
*Method 1	To clear	Disable	0
		Enable	1
	To not to clear	Disable	2
		Enable	3
*Method 2	To clear	Disable	4
		Enable	5
	To not to clear	Disable	6
		Enable	7

Method-1 : Resets the current sales along with those already individually reset.

Method-2 : Resets only those already individually reset.

- Entire system general Z-1 (#71) by master
- There are two modes; to reset only those already individually reset or to reset the current sales and those already individually reset
- YES/NO to automatically clear individual resetting memory at system general Z-1 (#71).
- ENABLE/DISABLE to perform #99 (clear individual resetting memory) before executing system general Z-1 (#71).

- #925-B :
1. ENABLE/DISABLE General resetting while a slave machine is sign-on.
 2. Disable/Enable registration after doing general Z1.
 3. Enable/disable individual resetting.

General Z1 at sign-on	Registration after general Z1	Individual reset	Parameter [B]
Disable	Disable	Disable	0
		Enable	1
	Enable	Disable	2
		Enable	3
Enable	Disable	Disable	4
		Enable	5
	Enable	Disable	6
		Enable	7

#925-C : Consolidation report format

Format	Parameter [C]
Consolidation report and report for each machine	0
Consolidation report only	1
Report for each machine only	2

- #925-D :
1. YES/NO to clear the individual resetting memory at open store.
 2. Reset at open store.

Clear individual resetting memory	Z in open store	Parameter [D]
To clear at open store	Disable	0
	Enable	1
To not to clear at open store	Disable	2
	Enable	3

<JOB# 899> IN-LINE RAM area clear

Key operation

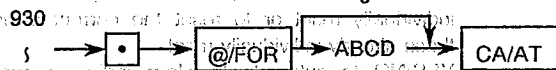


SRV reset must be performed after a #899.

<JOB # 930 - 937>

Key operation

RESET REPORT COUNTER



937

930 : Z1 REPORT COUNTER

931 : Z2 REPORT COUNTER

932 : TAX RESET REPORT COUNTER

933 : HOURLY RESET REPORT COUNTER

934 : PLU RESET REPORT COUNTER

935 : CASHIER RESET REPORT COUNTER

936 : BALANCE RESET REPORT COUNTER

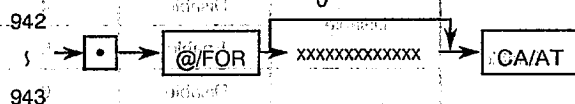
937 : SERVER RESET REPORT COUNTER

MRS = 0000

<JOB # 942 - 943>

Key operation

GT2, 3



942 : GT2 (POSITIVE GT)

943 : GT3 (NEGATIVE GT)

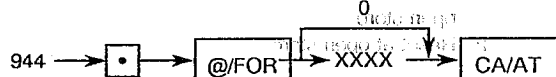
Value of GT1 is obtained with the equation below.

Equation: $GT1 = GT2 - GT3$

MRS = 00000000000000

<JOB # 944>

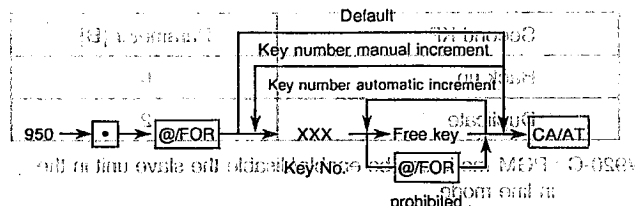
PGM2 MODE SÉCRET CODE



MRS = 0000

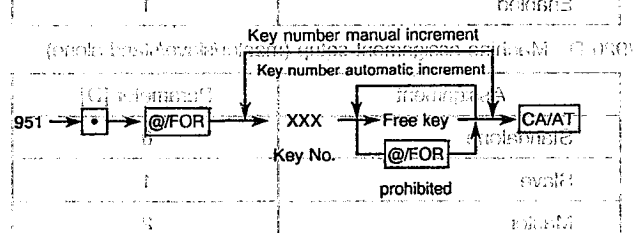
<JOB # 950>

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.

ER-3310 XXX : 1 ~ 156

ER-3311 XXX : 1 ~ 124

FUNCTION KEY LIST

NO.	FUNCTION	NO.	FUNCTION
1	0 KEY	36	%3
2	1 KEY	37	%4
3	2 KEY	38	MDSE SBTL
4	3 KEY	39	TRAY TOTAL
5	4 KEY	40	TAX
6	5 KEY	41	CHECK
7	6 KEY	42	CH1
8	7 KEY	43	CH2
9	8 KEY	44	CH3
10	9 KEY	45	CH4
11	00 KEY	46	CH5
12	•	47	FS TEND
13	CL	48	PBAL
14	@ / FOR	49	CBAL
15	# / SBTL	50	NS
16	CA / AT	51	CONVERSION
17	CASH2	52	RA
18	SCALE	53	PO
19	PLU / SUB	54	SERVICE
20	TRANS OUT	55	CHECK ADD
21	TRANS IN	56	DEPOSIT
22	SERVER#	57	DEPOSIT RE
23	CASHIER#	58	LEVEL1
24	MGR#	59	LEVEL2
25	TAX1 SHIFT	60	LEVEL3
26	TAX2 SHIFT	61	COVER COUNT
27	FS SHIFT	62	TABLE #
28	REFUND	63	TIP
29	RETURN	64	PRINT
30	VOID	65	RCPT
31	(-)1	66	SLIP
32	(-)2	67	EAT IN1
33	%1	68	EAT IN2
34	%2	69	EAT IN3
35		70	FINAL

Key position table (ER-3310)

↑ RECEIPT	↑ JOURNAL	28	38	48	58	68	78	88	98	108	118	128	138	148	158
9	18	27	37	47	57	67	77	87	97	107	117	127	137	147	157
8	17	26	36	46	56	66	76	86	96	106	116	126	136	146	156
7	16	25	35	45	55	65	75	85	95	105	115	125	135	145	155
6	15	24	34	44	54	64	74	84	94	104	114	124	134	144	154
5	14	23	33	43	53	63	73	83	93	103	113	123	133	143	153
4	13	22	32	42	52	62	72	82	92	102	112	122	132	142	152
3	12	21	31	41	51	61	71	81	91	101	111	121	131	141	151
2	11	20	30	40	50	60	70	80	90	100	110	120	130	140	150
1	10	19	29	39	49	59	69	79	89	99	109	119	129	139	149

Key position table (ER-3311)

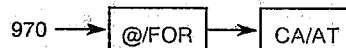
↑ Receipt	↑ Journal	20	28	36	44	52	60	68	76	84	92	100	108	116	124
↑ Receipt	↑ Journal	19	27	35	43	51	59	67	75	83	91	99	107	115	123
6	12	18	26	34	42	50	58	66	74	82	90	98	106	114	122
5	11	17	25	33	41	49	57	65	73	81	89	97	105	113	121
4	10	16	24	32	40	48	56	64	72	80	88	96	104	112	120
3	9	15	23	31	39	47	55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

<JOB # 971 >

File creation

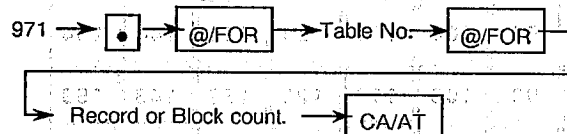
(2) File reading Key operation

One of the following key operations is required to create a file and to read the information of files.



- (1) File creation Job code #971
(2) File reading Job code #970

(1) File creation Key operation



When the above key entry is entered, the file of the specified table number is created.

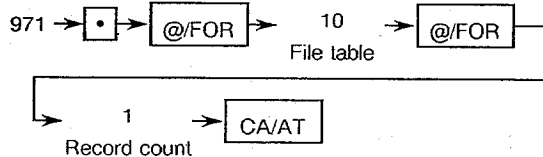
For table

File name	Table NO.	Record count	Block count	Record length	Memory size default/max. [byte]
Department	①	22 (0-99)	1	40	880/3960
Transaction	*2	73	1	34	2482
Server TRANS	③	12	14 (0-99)	11	1380/9540
Cashier TRANS	④	20	4 (0-99)	11	700/15900
Hourly	*5	48	1	9	432
Server PRESET	6	14 (0-99)	1	17	238/1783
Cashier PRESET	7	4 (0-99)	1	14	56/1386
PLU	⑧	80 (0-99)	1	43	3440/
REG buffer	*9	73	1	64	4672
Term DEPT.	⑩	Table NO.1	1	10	0/990
Term TRANS	*11	73	1	11	0/803
Term server	12	12	Table NO.3	11	0/9540
Term cashier	13	20	Table NO.4	11	0/15900
Term hourly	*14	48	1	9	0/432
PBLU	⑮	100 (0-99)	1	58	5800/
Manager	*16	99	1	3	297
Kitchen printer	*17	96	1	11	99
(FOR In-line) Server temporary	*18	12	1	11	0/132
DEPT. consolidate	*19	Table NO.1	1	10	0/990
TRANS. consolidate	*20	73	1	11	0/803
Hourly consolidate	*21	48	1	9	0/432
PLU consolidate	22	Table NO.8	1	43	0/
DEPT. receive	23	table NO.1	1	10	0/990
TRANS receive	*24	73	1	11	0/803
Hourly receive	*25	48	1	9	0/432
PLU receive	26	Table NO.8	1	43	0
DEPT. IRM	27	Table NO.1	1	10	0/990
TRANS. IRM	*28	73	1	11	0/803
Hourly IRM	*29	48	1	9	0/432
PLU IRM	30	Table NO.8	1	15	0/
Cashier receive	*31	20	1	11	0/220

NOTE-4

NOTE-1: ○ : Record count or block count are presettable by job number 971.
 *: Record count or block count are not presettable.
 "Table NO. n" means that the count data is subject to the setting of the specified file table number. That is, table number 1, 3, 4, and 8 will automatically change corresponding preset, term and in-line tables.

NOTE-2: In case creating term files, the following key entry is required.

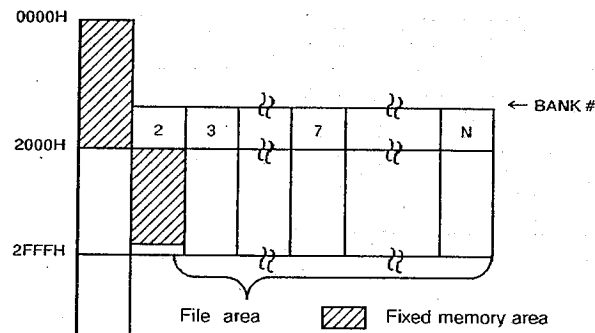


In case of deleting Term file, enter "0" as record count. Table numbers 11, 12, 13 and 14 are created when table number 10 is added with above key entry.

NOTE-3: Table number 18 through 31 are created with JOB number 899. (In-line RAM area clear job)

NOTE-4: IRM = individual Resetting Memory

Memory layout



There are 2 parts in memory, fixed memory area and file area. The fixed memory area is 12286 bytes of 0000H ~ 1FFFH of the common RAM and 2000H ~ 2FF5H of the bank 2 RAM. (In the In-line system, the fixed memory area is 17813 bytes) File area layout is variable with job number 971 operation and stored in the bank RAM.

Memory size calculation

(1) Calculating file size

(Record length) × (Record count) × (Block count) [bytes]

EX: To create 30 records (30 departments)

Department at record length = 40 bytes (from file table) record count = 30 and block count = 1 :

Memory requirement for department = 40 × 30 × 1 = 1200 bytes

(2) calculating total memory size

(Sum of each files size) + (Fixed memory size) [bytes]

Fixed memory size : Standalone/on-line mode = 12286 bytes
 in-line mode = 17813 bytes

File reading report

Stand alone machine at MRS.

#970		
%01%	00022	/00022
%02%	00073	/00073
%03%	00012	14/00012
%04%	00020	04/00020
%05%	00048	/00048
%06%	00014	/00014
%07%	00004	/00004
%08%	00080	/00019
%09%	00073	/00073
%15%	00100	/00000
%16%	00099	/00099
%17%	00009	/00009
BANK 07	2FFA	

→ Table NO./Record count/Used record count

→ Table NO./Record count/Block count/Used record count

→ Bank and address number of occupied memory

8. PGM1,PGM2(PROGRAM)MODES

There are two programming modes PGM1 and PGM2, each one assigned with a set function.

In the PGM1 mode, it is possible to set JOB#100 thru #199 (100 series), In the PGM2 mode, it is possible to set JOB#200 thru #299 (200 series), in addition to the PGM1 mode (100 series), Descriptions will be provided later in the section discussing details.

Basic programming format for PGM1 and PGM2 modes areas follows:

JOB code # → [] → @/FOR → (data) → CA/AT

Secret code entry

To start the operation of ECR in PGM2,PGM1,X1,Z1/X2/Z2 mode, the secret code which has been preset for the each mode should be entered by the following procedure.

Procedure

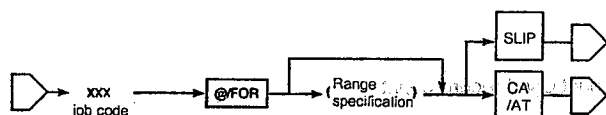
CA/AT → XXXX → CA/AT

Secret code

The secret code for PGM1, X1, Z1/X2/Z2 mode is preset in the PGM2 mode (JOB#280) and the code for PGM2 mode is preset in the SRV mode (JOB#944). Once the secret code has been entered, re-entry is not necessary to continue the operation in the same mode. If the secret number has been preset as "0", no secret code entry is necessary.

8-1 printing of program reports

Key entry sequence



List of program reports

Job code	Report name
110*	Department programming
215	promotion PLU code programming
219	Department/PLU code programming
120*	PLU/subdepartment programming
227	PLU level start number programming
130	Programming of % rates and other functions (including the programming for the method of each transaction)
131	Other function programming, 2
140	Server number list
240	Tax table programming
150	Cashier programming
259	Manager number programming
207	Kitchen printer programming
295	PBLU code programming

The reports on those programming jobs whose job codes are between 100 and 199 can be printed in both the PGM1 and PGM2 modes.

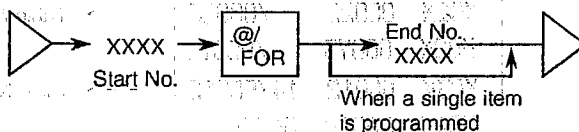
The reports on those programming jobs whose job codes are between 200 and 299 can be printed in the PGM2 mode.

★

Range specification for program reports

Those program reports asterisked in the above list requires range specification. If no range is specified, an error occurs whose the CA/AT Key is pressed.

Range specification can be accomplished by using the following procedure.



Pressing the CA/AT key prints a report on the receipt and journal.

Pressing the SLIP Key in place of the CA/AT Key causes the slip printer to print a report. (When the SLIP Key is pressed, a report is printed on the slip and journal, not on the receipt and journal.)

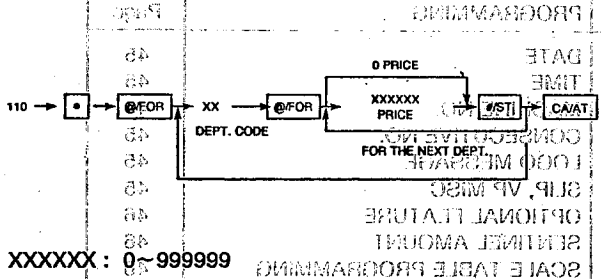
8-2 JOB CODE LIST

JOB NO	PROGRAMMING	Page	JOB NO	PROGRAMMING	Page
110	DEPT. PRICE	38	250	DATE	45
210	DEPT. FUNCTION	38	251	TIME	45
211	DEPT. MODIFY	38	252	MACHINE NO.	45
212	AMOUNT LIMIT FOR DEPTS	38	253	CONSECUTIVE NO.	45
213	DEPT. REPORT FORMAT	38	254	LOGO MESSAGE	45
214	DEPT. TEXT	38	255	SLIP, VP MISC	45
215	PROMOTION CODE	39	256	OPTIONAL FEATURE	46
218	PRINT STATION	39	257	SENTINEL AMOUNT	46
219	DIRECT DEPT. KEY	39	158	SCALE TABLE PROGRAMMING	46
120	PLU PRICE	39	260	MEDIA KEY PROGRAMMING	46
121	PLU ASSOCIATED-DEPT	39	261	MEDIA KEY HALO -1	47
122	PLU INVENTORY	39	262	MEDIA KEY HALO -2	47
220	PLU MISC	40	263	MEDIA KEY REPORT FORMAT	47
221	PLU MODIFY	40			
224	PLU TEXT	40	270	TILL TIMER	47
225	BOTTLE DEPOSIT	40	274	CHECK VP MESSAGE	47
226	PLU GROUP	40			
227	PLU LEVEL START CODE	40			
228	PRINT STATION	41			
229	DIRECT PLU KEY	41			
130	RATE	41	280-282	SECRET CODE	47
230	MISC KEY PROGRAMMING 1	41			
231	MISC KEY PROGRAMMING 2	41	286	STACK REPORT	48
232	MISC KEY AMOUNT LIMIT	42			
234	LABEL	42	295	GUEST CHECK # CREATION	48
235	MISC KEY PROGRAMMING 3	43			
236	MISC KEY PROGRAMMING 4	43	207	KITCHEN PRINTER PROGRAMMING	48
237	CHECK, CHARGE PRINT STATION	43	208	KITCHEN PRINTER TEXT	48
238	% ENTRY METHOD	43			
239	% HALO	43			
240	TAX TABLE	43			
241	% TAX	44			
141	SERVER CODE DEFINITION	44			
242	SERVER PROGRAMMING	44			
144	SERVER TEXT	44			
245	MANAGER CODE DEFINITION	44			
151	CASHIER CODE DEFINITION	44			
154	CASHIER TEXT	44			
259	CASHIER DRAWER NO.	44			

8-3 PROGRAMMING

[JOB #110]

PROGRAMMING OF DEPT. PRICE



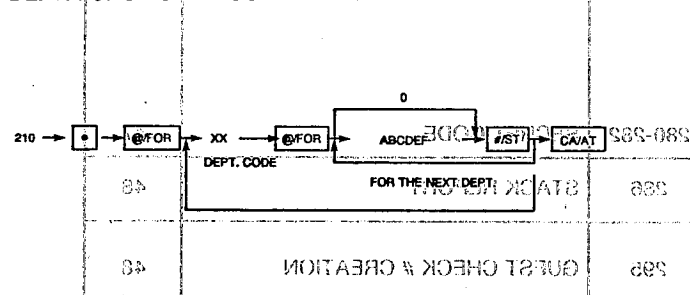
Preset price is max. 6 digits.

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 not been programmed to allow preset price entry in dept. function programming (JOB #210).

MRS = 0.00

[JOB#210]

DEPT. FUNCTION PROGRAMMING



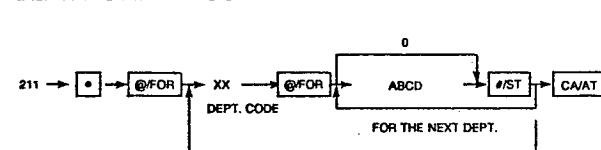
This programming is intended to decide whether or not to inhibit depts. to select preset or keyboard price, to decide whether or not to finalize the transaction with dept. key, to assign hash and promotion depts., and to select whether or not to enforce validation printing.

- A: HASH/NORMAL = 1/0
- B: PROMOTION/NORMAL = 1/0
- C: VALIDATION COMPULSORY/NON-COMPULSORY = 1/0
- D: SCALE ENTRY ALLOW / INHIBITED = 1/0
- E: SINGLE ITEM FINALIZE = 2
- SINGLE ITEM CASH SALE = 1
- NORMAL = 0
- F: OPEN & PRESET = 3
- PRESET = 2
- OPEN = 1
- INHIBIT = 0

MRS = 000001

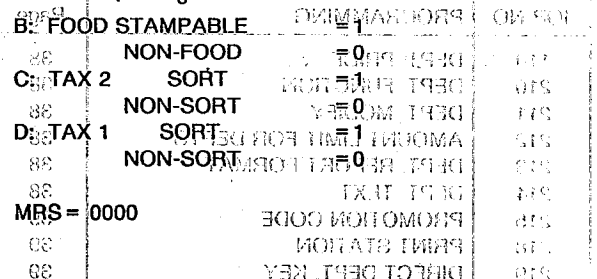
[JOB#211]

DEPT. MODIFY PROGRAMMING



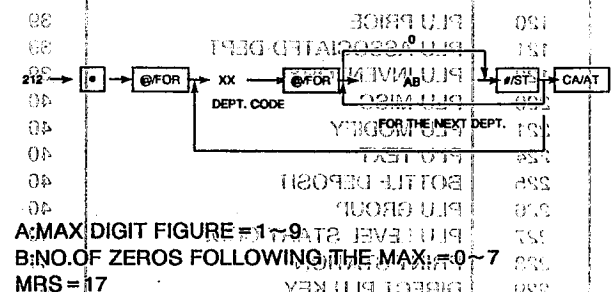
This programming is intended to decide the sign, tax status, and food stamp status.

A: SIGN - = 1



[JOB#212]

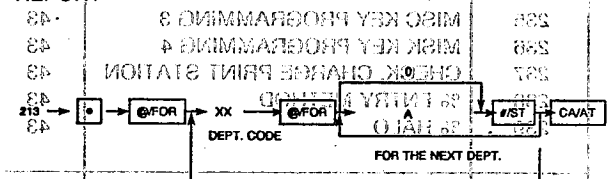
PROGRAMMING OF THE AMOUNT LIMIT FOR DEPTS.



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

[JOB#213]

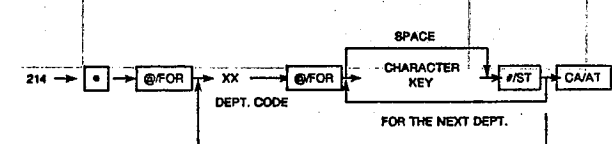
PROGRAMMING OF DEPT. PRINT/FORMAT IN FULL ITEM REPORT



- A: NORMAL PRINT & SPECIAL ST PRINT = 3
- NORMAL PRINT & ADDITION TO SPECIAL SUBTOTAL = 2
- NORMAL PRINT & 1 LINE FEED = 1
- NORMAL PRINT = 0
- MRS = 0

[JOB#214]

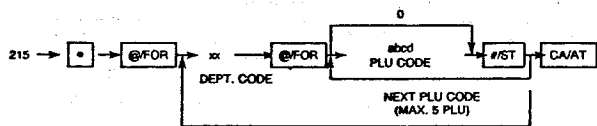
DEPT. TEXT PROGRAMMING



Characters can be entered by using alphabetic keys or numeric keys. Please refer to section 8-4 character assignment method. (Page 48)

MRS = DPT. X X

[JOB#215]
PROGRAMMING OF PROMOTION CODES



Up to 5 PLUs can be programmed.

※If the number of linked PLU is less than 5,

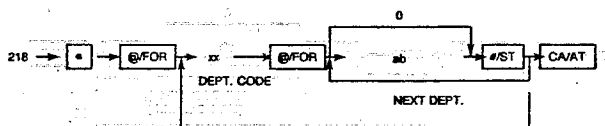
[/ST] key must be depressed once more before another dept. Code is entered.

(... → abcd → **[/ST]** → **[/ST]** → xx → **[@/FOR]** → abcd → ...)

PLU CODE DEPT. CODE PLU CODE

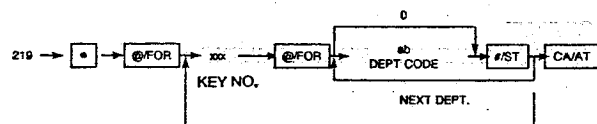
MRS = 0000

[JOB#218]
PRINT STATION



ab : RECEIPT/KITCHEN PRINTER = 00 (NO OUTPUT)
01~09 (KP PRINTER)
10 (RECEIPT)

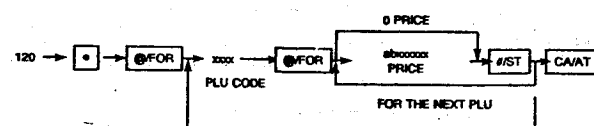
[JOB#219]
DEPARTMENT CODE DEFINITION FOR DIRECT PLU KEYS



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

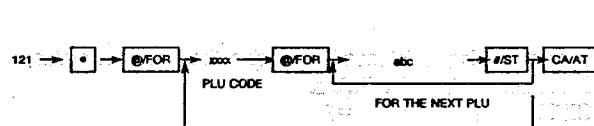
xxxxxx : PRICE = 0~999999

PLU code is max. 4 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

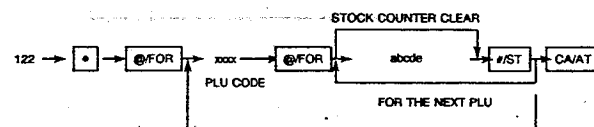


a : DELETE/PLU/SUB-DEPT/INHIBIT = 3/2/1/0
bc: DEPT. CODE = 1~99

"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 INVENTORY

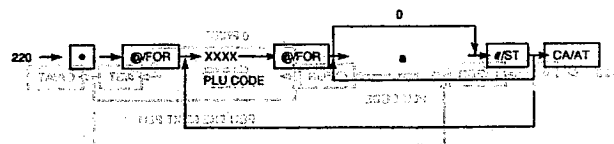


abcde : stock value = 0~99999

the stock value is max. 5 digits. The stock value entered is added to the PLU stock counter.

MRS = 0.00

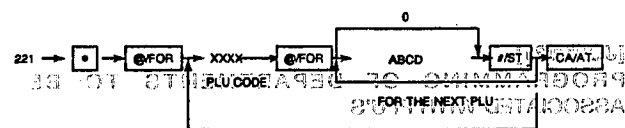
[JOB#220]
PLU MISC PROGRAMMING



a : SCALE COMPULSORY/ALLOW
 /INHIBITED = 1/0

MRS = 0

[JOB#221]
PLU MODIFY PROGRAMMING

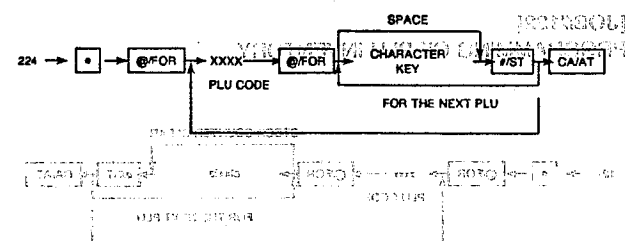


This programming is intended to decide the sign, tax status, and food stamp status for PLU's.

A: SIGN = 1
 = 0
 B: FOOD STAMPABLE = 1
 NON-FOOD = 0
 C: TAX 2 SORT = 1
 NON-SORT = 0
 D: TAX 1 SORT = 1
 NON-SORT = 0

NRS = 0000

[JOB#224]
PLU TEXT PROGRAMMING

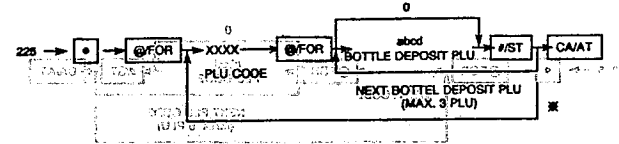


Characters can be entered by using alphabetic keys or numeric keys.
 Please refer to section 8-4 character assignment method.
 (Page 48)

UP TO 8 (OR 12) CHARACTERS CAN BE PROGRAMMED

MRS = PLU-xxxx

[JOB#225]
PROGRAMMING OF BOTTLE DEPOSIT (PLU LINKING)



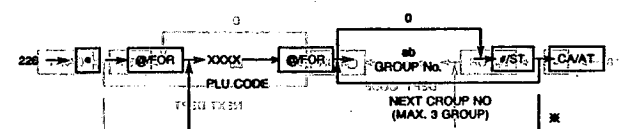
abcd: PLU CODE = 1~9999
 CLEAR = 0

Up to 3 PLUs can be programmed.
 ※If the number of bottle deposit PLU is less than 3, #/ST key must be depressed once more before another PLU code is entered.

(...→abcd→#/ST→#/ST→xxxx→@/FOR→abcd→...)
 BOTTLE DEPOSIT PLU PLU CODE BOTTLE DEPOSIT PLU

MRS = 0000

[JOB#226]
PLU GROUP PROGRAMMING



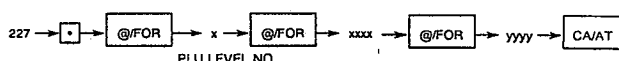
ab: GROUP NO. = 1~15

Up to 3 groups can be programmed.
 ※If the number of group is less than 3, #/st key must be depressed once more before another PLU code is entered.

(...→ab→#/ST→#/ST→xxxx→@/FOR→ab→...)
 Group NO. PLU CODE Group NO.

MRS = 00

[JOB#227]
PLU LEVEL START NO. PROGRAMMING

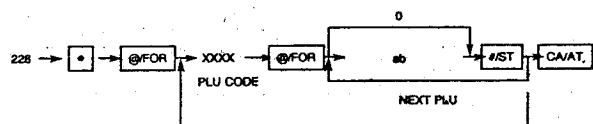


NOTE: This programming assigns ranges of PLUs to each level.

x : PLU LEVEL NO. = 1~3
 xxxx : PLU START code.
 yyyy : PLU END code

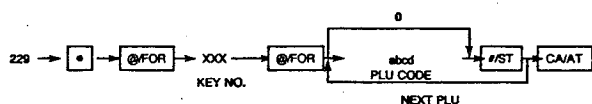
MRS = LEVEL 1:1~80, LEVEL 2:81~160
 LEVEL 3:161~240

[JOB#228]
PRINT STATION



ab:RECEIPT/KITCHEN PRINTER = 00 (NO OUTPUT)
01~09(KP PRINTER)
10 (RECEIPT)

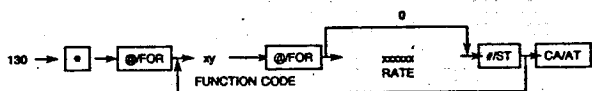
[JOB#229]
PLU CODE DEFINITION FOR DIRECT PLU KEYS



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

abcd: PLU CODE = 1~9999

[JOB#130]
RATE PROGRAMMING



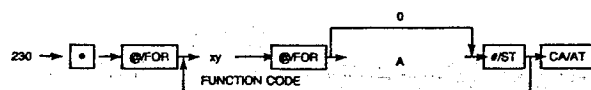
THIS PROGRAMMING IS INTENDED TO PRESET % RATE AND CONVERSION RATE.

xy: %1 = 7
%2 = 8
%3 = 9
%4 = 10
CONVERSION = 56
TIP = 70

RATE: 0.00~99.99 (%1~%4, TIP)
0.000~99999.999 (CONVERSION)
(PROGRAMMING OF 0 INHIBITS THE ENTRY OF % AND CONVERSION RATES.)

MRS = 0

[JOB#230]
MISC KEY PROGRAMMING - 1



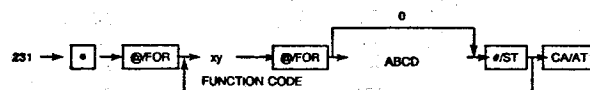
This programming is intended to select whether or not to enforce various functions.

xy: REFUND = 32
RA = 51
PO = 52
TIP = 69
CASH CHECK OPERATION = 53

A: VALIDATION COMPULSORY (RA, PO, TIP, REFUND)/ NON ADD CODE ENTRY COMPULSORY (CASH CHECK)
NONCOMPULSORY = 0
COMPULSORY = 1

MRS = 0

[JOB#231]
MISC KEY PROGRAMMING - 2



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

xy: %1 = 7
%2 = 8
%3 = 9
%4 = 10
(-)1 = 5
(-)2 = 6

A: SIGN - = 1
+ = 0

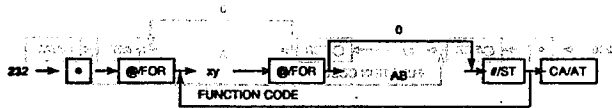
B: FOOD STAMPABLE = 1
NON-FOOD = 0

C: TAX 2 SORT = 1
NON-SORT = 0

D: TAX 1 SORT = 1
NON-SORT = 0

MRS = 1000

[JOB#232]
PROGRAMMING OF THE AMOUNT LIMIT FOR MISC
KEYS



xy: (-)1 =5
 (-)2 =6
 TAX =22
 RA =51
 PO =52
 TIP =70

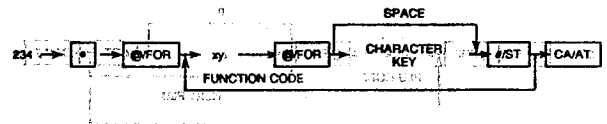
A: MAX DIGIT FIGURE =1~9
 B: NO. OF ZEROS FOLLOWING THE MAX. DIGIT FIGURE =0~7

MRS = 17, 18 (FOR RA and PO)

FUNCTION LIST

NO.	FUNCTION	DEFAULT	NO.	FUNCTION	DEFAULT
1	+ DEPT TTL	*DEPT TL	51	RA	***RA
2	-DEPT-TTL	DEPT (-)	52	PO	***PO
3	HASH+DEPT	*HASH TL	53	CASH/CHECK	CA/CHK
4	HASH-DEPT	HASH (-)	54	CHECK CHANGE	CHK/CG
5	(-)1	(-) 1	55	FS CHANGE	FS/CG
6	(-)2	(-) 2	56	CONVERSION	CONV
7	%1	%1	57	FS IN DRAWER	FS/D
8	%2	%2	58	CHARGE1	CHARGE1
9	%3	%3	59	CHARGE2	CHARGE2
10	%4	%4	60	CHARGE3	CHARGE3
11	NET1	NET1	61	CHARGE4	CHARGE4
12	TAXABLE1 ST	TAX1 ST	62	CHARGE5	CHARGE5
13	GROSS TAX1	GRS TAX1	63	CHECK	CHECK
14	REFUND TAX1	RFD TAX1	64	CA+CK ID	CA+CK ID
15	NET TAX1	TAX1	65	CASH ID	***CID
16	TAXABLE2 ST	TAX2 ST	66	DEPOSIT	DEPOSIT
17	GROSS TAX2	GRS TAX2	67	DEPOSIT RF	DEPO RF
18	REFUND TAX2	RFD TAX2	68	SERVICE	***SERV
19	NET TAX2	TAX2	69	TIP PAID	TIP PAID
20	GROSS M-TAX	GRS MTAX	70	TIP IN	TIP IN
21	REFUND M-TAX	RFD MTAX	71	EAT IN1	EAT IN 1
22	NET M-TAX	M-TAX	72	EAT IN2	EAT IN 2
23	FS1 FORGIVE	FS TAX1	73	EAT IN3	EAT IN 3
24	FS2 FORGIVE	FS TAX2	74	PB	***PBAL
25	TOTAL TAX	*TTL TAX	75	CB	***CBAL
26	NET2	NET2	76	SUBTOTAL	SUBTOTAL
27	COUPON PLU	CP PLU	77	MDSE SBTL	MDSE ST
28	VOID	VOID	78	TOTAL	***TOTAL
29	SBTL VD	SBTL VD	79	CHANGE	CHANGE
30	MANAGER VOID	MGR VOID	80	DUE	DUE
31	VOID TRANS	VOID	81	TRY TOTAL	TRY/TTL
32	REFUND	REFUND	82	FS SBTL	FS ST
33	RETURN	RETURN	83	FS TEND	FS TEND
34	HASH VOID	HASH VD	84	FS CHANGE	FS/CG
35	HASH REFUND	HASH RF	85	TAX12 ST	TAX12ST
36	HASH RETURN	HASH RT	86	FINAL	***FINAL
37	NOSALE	NOSALE	87	SCALE	WEIGHT
38	VP	VP	88	VOID	VOID
39	SLIP	SLIP CNT	89	COPY	COPY
40	TRY ST COUNT	TRAY CNT	90	TRANS OUT	TRAN. OUT
41	DRAWER COUNT	DRW CNT	91	TRANS IN	TRAN.IN
42	PBAL COUNT	PBAL CNT	92	BALANCE	***BAL
43	COVER COUNT	COVER CT	93		
44	TRANS OUT	TRNS OUT	94		
45	TRANS IN	TRNS IN	95		
46	CUSTOMER	CUSTOMER	96		
47	SALES	NET3	97		
48	CASH	CASH	98		
49	CASH2	CASH2	99		
50	FS SALE	FSSALE	100		

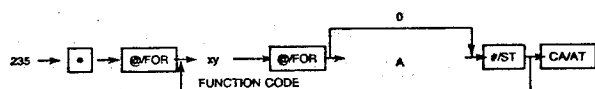
[JOB#234]
TEXT PROGRAMMING FOR MISC KEYS



xy: FUNCTION CODE

Characters can be entered by using alphabetic keys or numeric keys.
 Please refer to section 8-4 character assignment method.
 (Page 48)

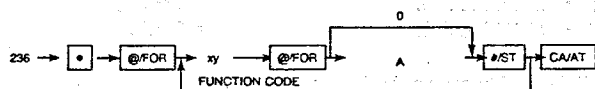
[JOB#235]
MISC KEY PROGRAMMING - 3



xy: %1 =7
 %2 =8
 %3 =9
 %4 =10
A: ITEM % =1
 SBTL % =0

MRS=0

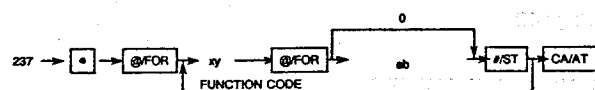
[JOB#236]
MISC KEY PROGRAMMING - 4



xy: (-)1 =5
 (-)2 =6
A: STORE (-) =1
 VENDER (-) =0

MRS=0

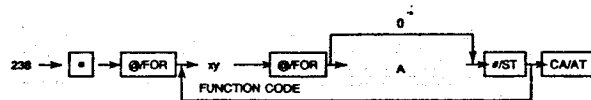
[JOB#237]
CHECK, CHARGE PRINT STATION



xy: CHK =63
 CH1 =58
 CH2 =59
 CH3 =60
 CH4 =61
 CH5 =62

ab: RECEIPT/KITCHEN PRINTER = 00 (NO OUTPUT)
 01~09 (KP PRINTER)
 10 (RECEIPT)

[JOB#238]
PROGRAMMING OF THE % ENTRY METHOD



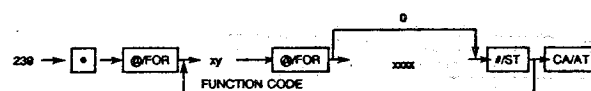
THIS PROGRAMMING IS INTENDED TO DECIDE THE % ENTRY METHOD.

xy: %1 =7
 %2 =8
 %3 =9
 %4 =10

A: OPEN & PRESET =3
 PRESET =2
 OPEN =1
 INHIBIT =0

MRS = 1

[JOB#239]
% HALO



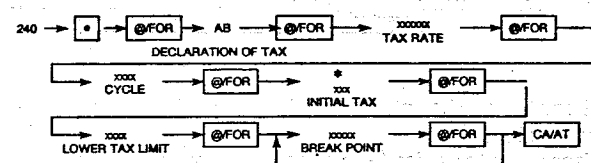
This programming is intended to preset halo for % entries.
% rate smaller than preset value can be entered. (selecting "0" inhibits the entry of % rate.)

xy: %1 =7
 %2 =8
 %3 =9
 %4 =10

xxxx: RATE = 0~9999

MRS = 99.99

[JOB#240]
TAX TABLE PROGRAMMING



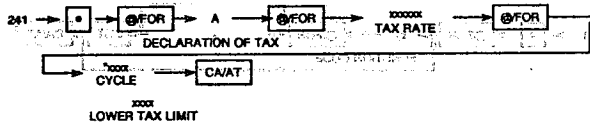
98 breakpoints can be programmed.

*Depression of the #/ST key at the following points means a tax table delete operation.

A: INTERVAL BETWEEN BREAKPOINTS IS =1
 1 DOLLAR OR MORE
 INTERVAL BETWEEN BREAKPOINTS IS =0
 BELOW 1 DOLLAR
B: TABLE 1 PROGRAMMING =1
 TABLE 2 PROGRAMMING =2

MRS=NO TAX

[JOB#241] **% TAX RATE PROGRAMMING**

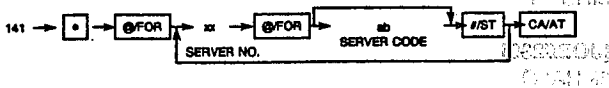


A: TABLE 1 PROGRAMMING = 1
 TABLE 2 PROGRAMMING = 2

% TAX RATE 0.0001~99.9999%
 LOWER TAX LIMITATION max. 99.99

MRS = 0

[JOB#141] **SERVER CODE DEFINITION**



xx: SERVER NO. = 1~15(99)
 ab: SERVER CODE = 1~99

MRS = NO SERVER CODE IS PROGRAMMED

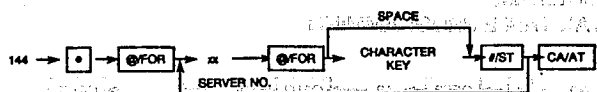
[JOB#242] **SERVER PROGRAMMING**

RANGE OF PBLU NUMBERS THAT A SERVER CAN USE



[JOB#144]

SERVER TEXT PROGRAMMING



Characters can be entered by using alphabetic keys or numeric keys.
 Please refer to section 8-4 character assignment method.
 (Page 48)

MAX. 8 CHARACTERS

MRS = 'space'

[JOB#245]

MANAGER CODE DEFINITION

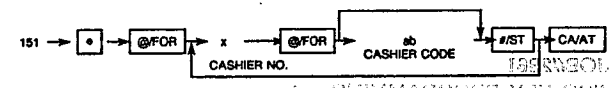


xx : MANAGER NO. = 1~99
 ab : MANAGER CODE = 1~99

MRS = NO MANAGER CODE IS PROGRAMMED

[JOB#151]

CASHIER CODE DEFINITION

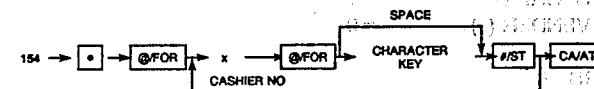


x : CASHIER NO. = 1~4(9)
 ab : CASHIER CODE = 1~99

MRS = No cashier code is programmed

[JOB#154]

CASHIER TEXT PROGRAMMING



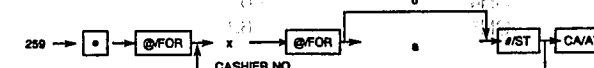
Characters can be entered by using alphabetic keys or numeric keys.
 Please refer to section 8-4 character assignment method.
 (Page 48)

MAX. 8 CHARACTERS

MRS = 'space'

[JOB#259]

CASHIER DRAWER ASSIGNMENT

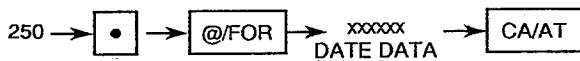


x : CASHIER NO. = 1~4(9)
 a : DRAWER NO. = 1~4
 NOT OPEN = 0

MRS = 1

[JOB#250]

DATE SETTING

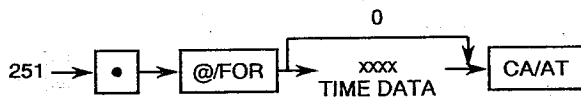


The entry format is the same as the print format (which is decided by srv-mode programming).
A 6-digit integer must be entered for the date setting.
Entering a zero first causes an error.

MRS = 010100

[JOB#251]

TIME SETTING



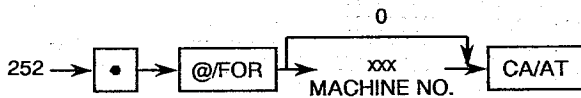
xxxx : 0 ~ 2359

The time must be entered on 24-hour system.
A 4-digit integer or smaller one must be entered for the time setting.

MRS = 0000

[JOB#252]

MACHINE NUMBER

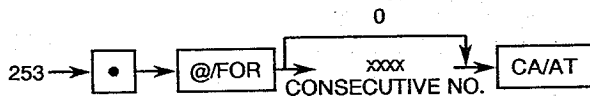


A 3-digit integer or smaller one must be entered for the machine number setting.

MRS = 000

[JOB#253]

CONSECUTIVE NO. SETTING

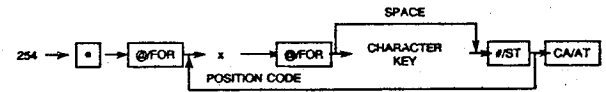


A 4-digit integer or smaller one must be entered for the consecutive no. Setting.

MRS = 0000

[JOB#254]

LOGO TEXT PROGRAMMING



x : 1 ~ 6

1
2
3
4
5
6

1 BLOCK MAX. 21 CHARACTERS

Characters can be entered by using alphabetic keys or numeric keys.
Please refer to section 8-4 character assignment method. (Page 46)

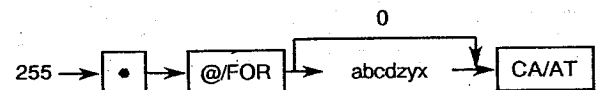
MRS = 'space'

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, TRY ST FEED LINE AND NO. OF TIMES OF VALIDATION PRINTING



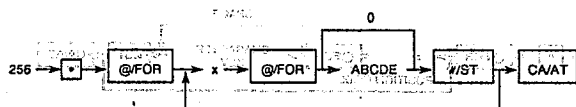
ab : INITIAL SLIP FEED LINE = 0 ~ 64
cd : SLIP PRINT MAX LINE NO. = 0 ~ 99
z : NO. OF TIMES OF SLIP PRINTING = 0 ~ 9
y : NO. OF TIMES OF VALIDATION PRINTING = 0 ~ 9
x : FEED LINE AFTER DEPRESSION OF TRAY ST KEY = 0 ~ 9

* Options must be present to change.

MRS = 0099110

[JOB#256]

OPTIONAL FEATURE PROGRAMMING



x : 1

A	=0	
B	PLU LEVEL SHIFT SYSTEM MANUAL (MGR MODE ONLY)	=3
	MANUAL (REG and MGR MODE)	=2
	AUTO (MGR MODE ONLY)	=1
	AUTO (REG and MGR MODE)	=0
C	OP X/Z mode Disallowed/ disall	=1/0
D	Always 0	
E	JOURNAL SELECT/NOT	=1/0

x : 2

A	CA/AT Key inhibited/allowed	=1/0
B	INDIRECT VOID IN REG MODE INHIBITED/ ALLOWED	=1/0
C	DIRECT VOID IN REG MODE INHIBITED/ ALLOWED	=1/0
D	REFUND IN REG MODE INHIBITED/ ALLOWED	=1/0
E	RETURN IN REG MODE INHIBITED/ ALLOWED	=1/0

x : 3

A	=0	
B	NON ADD CODE PRINT DISALLOWED/ALLOWED	=1/0
C	TIP ENTRY METHOD FIXED-RATE ENTRY/AMOUNT ENTRY	=1/0
D	PLU RANGE REPORT ZERO SUPPRESS NO/YES	=1/0
E	PLU GROUP REPORT ZERO SUPPRESS NO/YES	=1/0

X : 4

A,B,C	000	
D	METHOD OF PAYMENT CALCULATION (For PBLU) FOR EACH TRANSACTION OPERATION/ GUEST TOTAL	=1/0
E	Entry of the NO. of guests and table# (for PBLU) compulsory /noncompulsory	=1/0

Note : X represents the section of this Job code, there are 4 sections.

MRS = 0000

[JOB#257]

SENTINEL AMOUNT PROGRAMMING



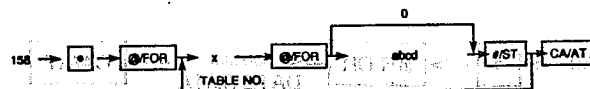
xy : FUNCTION CODE
SENTINEL = 65

xxxxxxx : AMOUNT LIMIT = 0~99999999

MRS = 999999.99

[JOB#158]

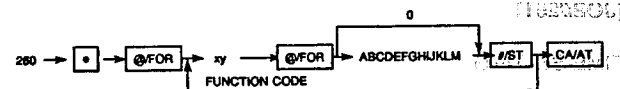
SCALE TABLE PROGRAMMING



x : TABLE NO. = 1~9
abcd : TARE WEIGHT = 0.00~99.99
MRS = 00.00

[JOB#260]

MEDIA KEY programming.



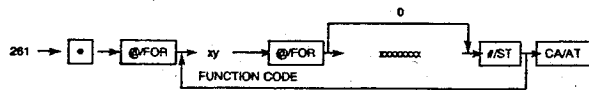
xy : FUNCTION CODE

CA1 = 48
CA2 = 49
FS TEND = 50
CHK = 63
CH1 = 58
CH2 = 59
CH3 = 60
CH4 = 61
CH5 = 62
EAT IN1 = 71
EAT IN2 = 72
EAT IN3 = 73

A : FS SUBTOTAL BEFORE FOOD STAMP TENDERING
COMPULSORY/NONCOMPULSORY = 1/0
B : SLIP PRINT COMPULSORY/
NONCOMPULSORY = 1/0
C : VALIDATION PRINT
COMPULSORY/NONCOMPULSORY = 1/0
D : NON ADD CODE ENTRY
COMPULSORY/NONCOMPULSORY = 1/0
E : NO. OF ENTRY DIGITS OF NON-ADD CODE
4/8/12/16 = 3/2/1/0
F : TAX2 DELETE/NOT = 1/0
G : TAX1 DELETE/NOT = 1/0
*H : FOOTER PRINT YES/NO = 1/0
I : DISPLAY OF SUBTOTALS COMPULSORY/
NONCOMPULSORY = 1/0
J : CHANGE DISABLE/ENABLE = 1/0
K : SHORT AMOUNT TENDER DISABLE/ENABLE = 1/0
L : ENTRY OF AMOUNT TENDERED/
COMPULSORY
NONCOMPULSORY = 1/0
M : DRAWER OPEN NO/YES = 1/0
MRS = 000000000000

*Note
(H) FOOTER print yes/no programming is valid only when
"stamp and 3-line footer" is selected in job#912d
programming.

MEDIA KEY HALO-1

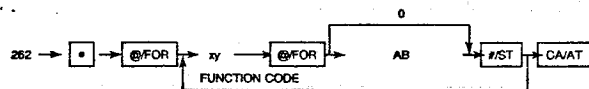


```
xy : FUNCTION CODE
CHECK CHANGE           = 54
CASH CHECK             = 53
xxxxxxx : AMOUNT LIMIT = 0~99999999
```

MRS = 999999.99

[JOB#262]

MEDIA KEY HALO-2

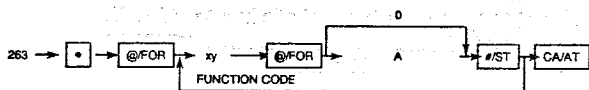


xy : FUNCTION CODE	
CA1	=48
CA2	=49
CHK	=63
CH1	=58
CH2	=59
CH3	=60
CH4	=61
CH5	=62
A : MAX DIGIT FIGURE	=1~9
B : NO. OF ZEROS FOLLOWING THE MAX. DIGIT FIGURE	=0~8

MRS = 18

[JOB#263]

MEDIA KEY FULL ITEM REPORT PRINT FORMAT
PROGRAMMING

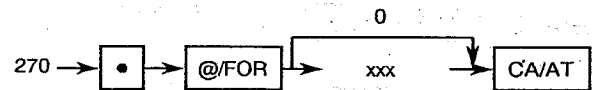


xy : FUNCTION CODE	
CA1	=48
CA2	=49
CHK	=63
CH1	=58
CH2	=59
CH3	=60
CH4	=61
CH5	=62
A : NORMAL PRINT & SPECIAL ST PRINT	=3
NORMAL PRINT & ADDITION TO SPECIAL ST	=2
NORMAL PRINT & 1 LINE FEED	=1
NORMAL PRINT	=0

$$MRS = 0.$$

[JOB#270]

PROGRAMMING OF THE TIME INTERVAL FOR THE TILL TIMER

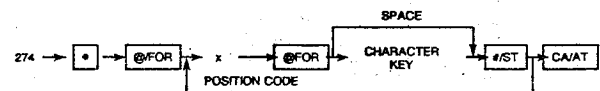


x : 0 ~ 255 sec

MRS = 000

[JOB#274]

CHECK VALIDATION MESSAGE PROGRAMMING



x: 1~3

1	1. Name of the person or entity who is the owner of the property.
2	2. Address of the property.
3	3. Description of the property.

1 BLOCK MAX. 21 CHARACTERS

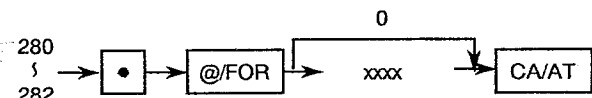
Characters can be entered by using alphabetic keys or numeric keys.

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

MRS = "space"
"space"
FOR DEPOSIT ONLY

[JOB#280, 281, 282]

SECRET CODE PROGRAMMING



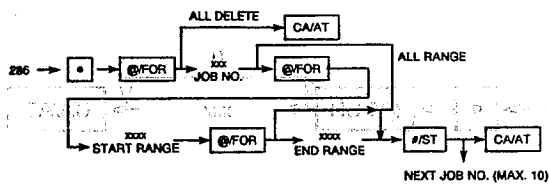
```
#280 : PGM1 MODE
#281 : Z1 MODE
#282 : Z2 MODE
```

IF "0" IS ENTERED, "COMPULSORY SECRET CODE ENTRY" IS CANCELED.

MRS = 0000

[JOB#286]

STACK REPORT



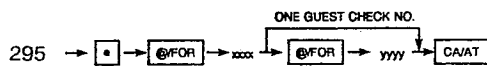
UP TO 10 DIFFERENT REPORTS CAN BE MEMORIZED IN A STACK REPORT.

JOB NO.	REPORT
01	General
20	PLU
23	PLU ALL GROUP
24	PLU INVENTORY
06	ALL SERVER
05	ALL CASHIER
04	HOURLY
60	PBLU
30	CID
40	TAX

MRS = ALL DELETE

[JOB#295]

RANGE PROGRAMMING OF GUEST CHECK NUMBERS

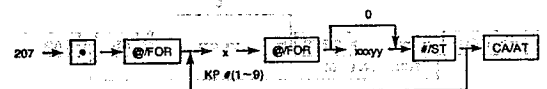


xxx : Start guest check No.
yyy : End guest check no.

MRS = 0001 ~ 9999

[JOB#207]

KITCHEN PRINTER PROGRAMMING



X : Kitchen printer # (1~9)

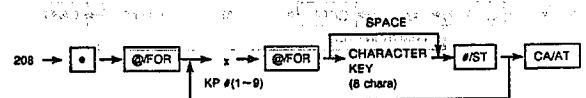
MRS = 000

XXX = IRC terminal number of ER-01RP. (1~254)

YY = Backup / duplicate kitchen printer number (KP).

[JOB#208]

KITCHEN PRINTER TEXT PROGRAMMING



x : KITCHEN PRINTER #. (1~9)

MRS = all space.

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

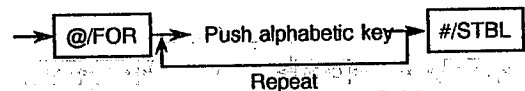
Please refer to section 8-4 character assignment method (Page 48)

8-4 Character assignment method

The ER-3310/3311 has two kinds of method at character assignment.

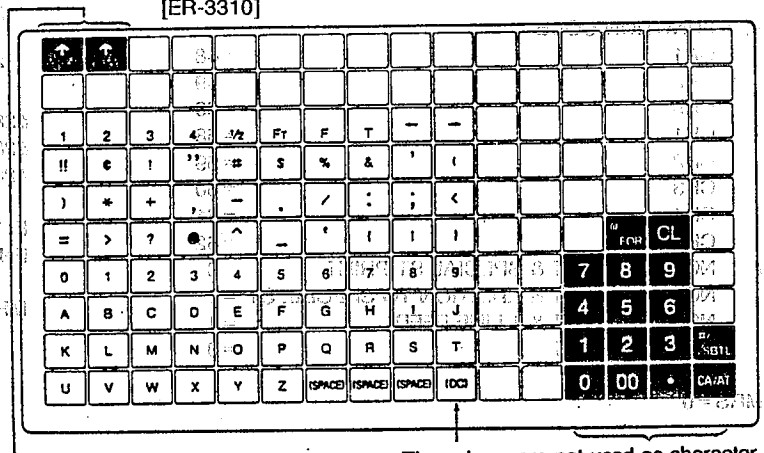
One is to use alphabetic assigned key and other one is to use ten keys.

~Using alphabetic assignment method~



• The layout of the programming key sheet it as follows

[ER-3310]



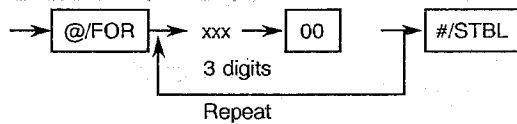
These keys are not used as character keys.
Used for making double-size characters

Programming key layout (ER-3311)

		0	1	2	3	4	5	6	7	8	9		;	<
		1	2	3	4	1/2	F _T	A	B	C	D		=	>
F	T	←	→					E	F	G	H		?	@
!!	¢							I	J	K	L		^	—
!	"	#	\$					M	N	O	P		'	{
%	&	'	(					Q	R	S	T			}
)	*	+	,					U	V	W	X			
-	.	/	:					Y	Z	(SPACE)	(DC)			

Note : The (DC) means double-size character code and this key is used for double-size character programming.
Character keycover : GCOVB6925RCZZ

~Using ten keys~



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	Å	119	w
036	\$	064	@	092	Ö	120	x
037	%	065	A	093	Û	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	β
043	+	071	G	099	c	127	φ
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	½
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	~
054	6	082	R	110	n	138	=
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	γ
059	;	087	W	115	s	251	DC

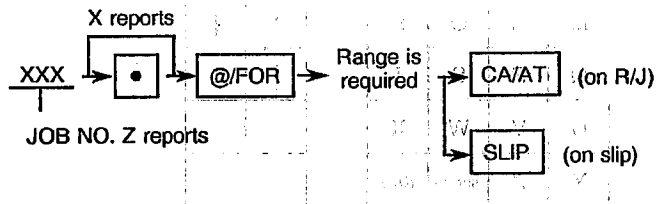
DC: DOUBLE CODE

9. 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 "○" in the following table shows the function available on the standard machine and marked with a triangle, "△" shows the function that can be used with an option in use.

Job code (*3)	Kind of report	Mode (*1)						Input data required
		OP X/Z		X1	Z1/X2/Z2			
		X	Z	X1	Z1	X2	Z2	
01	General			○	○	△	△	—
02	Individual cashiers	○		○	○	△	△	Cashier numbers
03	Individual servers	○		○	○	△	△	Server numbers
04	Hourly (all)					△	△	—
	Hourly (specified period)		X Y	○ ○		△ △		Hourly zone specify range (0000 ~ 2330)(*2)
05	All cashiers		X	○	○	△	△	—
06	All servers		X	○	○	△	△	—
09	Stack report		○	○	○	△	△	—
12	Department (specific department)			○		△		Dept key depression
20	PLU (specific range)			○	○			PLU code specify range (1 ~ 9999)(*2)
21	PLU subsidiary department specify			○				Department code (1 ~ 50)
22	PLU group specify			○				Group code (1 ~ 15)
23	All PLU groups			○				—
24	PLU INVENTORY			○				PLU code specify range (1 ~ 9999)(*2)
30	CID			○		○		—
240	Tax					△	△	—
60	PB lookup sales			○	○			—
	PB lookup sales (specific range)			○				PBLU code range specify (1 ~ 9999)(*2)
61	PB lookup sales (by servers)			○				Server number specify. range. (*2)

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 1, and the job code 201 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).

10. Service preactions

10-1 SSP (Special Service Preset)

SSP (Special Service Preset) is a software revising tool that developed by SHARP to be used for majority of SHARP electronic cash registers.

Overview

Because electronic cash register program is stored in ROM area, it will be possible to replace ROM chip to do even a small program change, urgent program revision, or to get rid of a bug in program. To avoid this disturbance, the special service preset is provided to permit a program revision through the keyboard without replacing ROM. So, SSP is employed to revise a part of program through the keyboard. Generally, SSP will serve to implement a special program for some user and to do urgent program revision such as to eliminate a program bug.

Description

In order to do SSP, it is necessary to have special hardware and software such as the SSP only memory area to enter the SSP program, monitor ROM to monitor program progress, and software to operate SSP.

For SSP, a part of the program in the ROM is picked up and a new program portion is entered on the keyboard. The program entered will be stored in the SSP area specially provided for it.

When it comes to a section of the program to be revised, the control jumps to an SSP area to execute the keyboard entered program portion. That is, a part of the ROM is replaced by the program part entered through the keyboard. (Fig. 10-1)

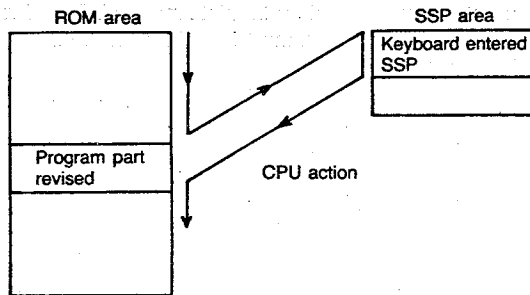
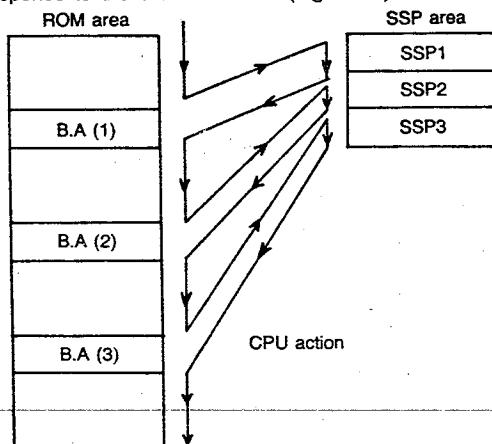


Fig.10-1

The address from which the control jumps from the ROM program to the SSP area is called BREAK ADDRESS. For it is possible to provide any number of break addresses, it becomes possible to revise a multiple number of program areas.

Naturally, the control jumps to the SSP program area that corresponds to the break address. (Fig. 10-2)



B.A: Break addresses

Fig. 10-2

As the SSP data entered through the keyboard are decimal mnemonics used by the CPU, entry of an insignificant figure may allow the CPU to operate properly.

List of SSP data will be issued on Technical Report, whenever required.

SSP for ER-3310/3311

Although SSP is used for the ER-3310/3311, it has a different specification as SSP used for the (ER-4230, ER-4630,) etc.

NOTE (*): ER-4230 US and Canadian, other version
ER-4630 European, other version

- 1) To revise a large numbers of program portions by the normal SSP, these portions are linked together into one SSP before entered through the keyboard. (Fig. 10-3)

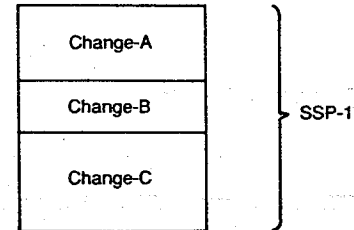


Fig. 10-3

That is, numbers of SSPs must be provided and entered in the following manner; 7 kinds for an example below.

Spec revision (1) Revised by change-A
Spec revision (2) Revised by change-B
Bug elimination (3) Eliminated by change-C

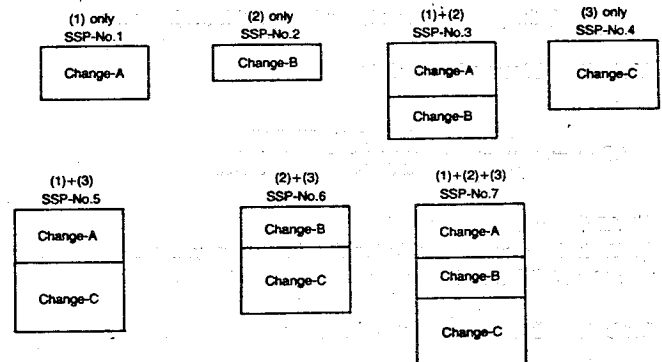


Fig. 10-4

If there are "n" numbers of program revisions and specification changes, it requires SSP of deeper level (2n-1).

- 2) For SSP of the ER-3310/3311, it is made possible to make entry of a several numbers of SSP after an individual SSP was entered as a single SSP. (Add-on type) So, it would be possible to select only the required SSPs out of the library to meet user's request. For those already containing SSPs, a new SSP can be added after mere entry of required SSP.

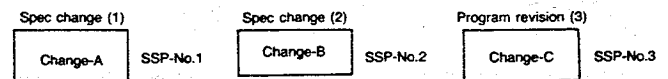


Fig. 10-5

It now becomes possible to make easier specification change and to create SSP library.

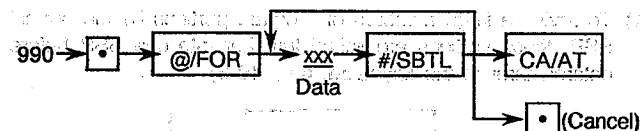
For "n" numbers of program changes, SSP will be counted "n".

ER-3300 SSP entry procedure

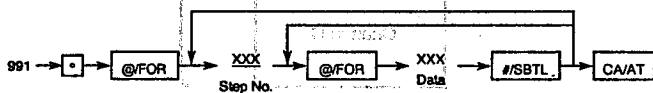
The following five keyboard commands are provided for SSP.

- 1) Set SSP (Job 990)
- 2) Correct SSP data (Job 991)
- 3) Clear all SSP data (Job 992)
- 4) Clear individual SSP data (Job 993)
- 5) Restore SSP data (Job 790)
- 6) Check SSP data (Job 990)

[Job #990] Set SSP (w/checksum)

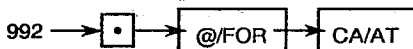


[Job 991] Correct SSP data



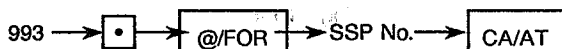
- ☐ The most recent SSP data are corrected.
- ☐ The step number must be specified to correct its data.
- ☐ For the data of Step No.=1 indicates the SSP number, it results in error if the existing SSP No. was entered.
- ☐ If a step number is greater than the existing SSP steps, that SSP data are added.
- ☐ If none of SSP does not exist or the most recent SSP was deleted, the job execution is enabled and it evokes an error.

[Job 992] Clear all SSP data



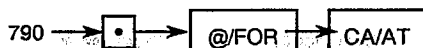
- ☐ All SSP data are cleared.
- ☐ With this operation, only the flag is deleted without erasing the actual SSP data in storage.

[Job 993] Clear individual SSP data



- ☐ The specified individual SSP data are cleared.
- ☐ Although the specified data are set invalid, the area remains occupied.

[Job 790] Restore SSP data



- ☐ The SSP data that cleared by master reset or Job 992 are restored.

[Job 990] Check SSP data



- ☐ All SSP in the memory are printed out.

[Precautions]

Power must be turned off after completing the entry of the SSP data. Otherwise, proper operation is not attained.

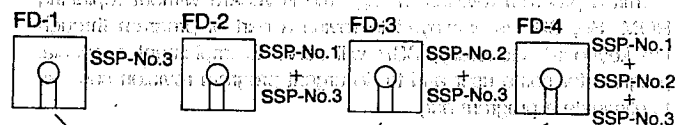
Example of SSP entry

It is possible to make duplicate of the SSP using the ER-3300 down load function. It is also possible to store the SSP data on floppy disk using the ER-01FD/02FD 3.5" mini-floppy disk unit and load the data from the floppy disk on the field.

Spec change (1) SSP-No.1

Spec change (2) SSP-No.2

Program bug elimination SSP-No.3



Choose one of FD to load SSP.

Fig. 10-7

NOTE: When an SSP is copied using the ER-3310/3311 and ER-01FD/02FD, the SSP data within the receiving side registers are replaced by the data received. Therefore, all the required SSP data must be written on the floppy disk before transmission.

Copying SSP data from the ER-3310/3311 to another ER-3310/3311

- (1) Connect the transmitter ECR with the receiver ECR using the cable (QCNW-6952RCZZ).

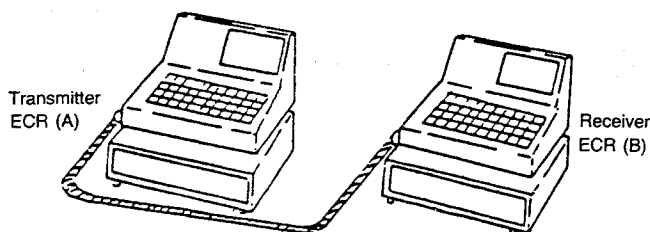
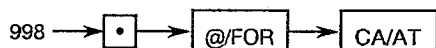
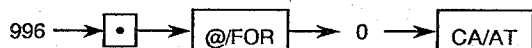


Fig. 10-8

- (2) Set the receiver ECR (B) ready to receive. Key operation (MODE switch at SRV):



- (3) Send the SSP data from the transmitter ECR (A). Key operation (MODE switch at SRV):



The SSP data are started to transmit.

- (4) Check the journal tapes on both sides that they have the following messages:

Transmitter (A) "SEND SUCCEED 000 "

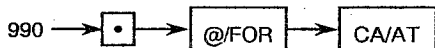
Receiver (B) "RECEIVE SUCCEED 000 "

Repeat from Step (2) all over again, if "ERROR" is printed.

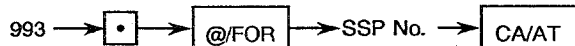
- (5) Do the following key operation ③ on the receiver ECR to print the SSP data and verify it with that of the transmitter ECR.

If an error is found, clear the SSP data in the receiver ECR with the key operation ④ and repeat to receive the data again.

Key operation ③ (Checking SSP)



Key operation ④ (Clear SSP)



Save SSP data from the ER-3310/3311 onto the ER-01FD/02FD

- (1) Connect the SSP containing ECR with the ER-01FD/02FD.

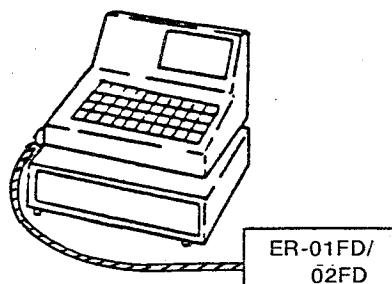
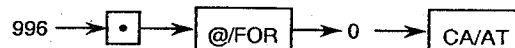


Fig. 10-9

- (2) Insert the newly formatted disk in the ER-01FD/02FD and turn power on to the ER-01FD/02FD.

- (3) Send the SSP data.

Key operation (MODE switch at SRV):



- (4) Check the journal tape that the following is printed.

" SEND SUCCEED 000 "

Repeat from Step (3) all over again, if "ERROR" is printed.

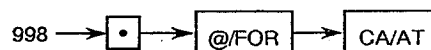
Loading SSP from the ER-01FD/02FD to the ER-3300

- (1) Connect the ER-3310/3311 with the ER-01FD.

- (2) Insert the SSP data contained disk in the drive unit and turn power on.

- (3) Set the ECR ready to receive.

Key operation (MODE switch at SRV):



- (4) Depress the SEND switch of the ER-01FD/02FD.

- (5) Check the journal tape that the following is printed.

" RECEIVE SUCCEED 000 "

Repeat from Step (3) all over again, if "ERROR" is printed.

Size of the SSP area.

When SSP data are to be loaded on field, pay attention for the number of steps to avoid exceeding the SSP area size.

Each SSP has the information for the available number of steps.

$$\Sigma(\text{steps} + 2) + 1 \leq 520$$

Sum of SSPs + 2

Select SSPs so as to satisfy the above equation.

SSP library

Use of the following kind list is recommended to maintain the SSP library.

SSP No.	Description	Steps	ROM version

Fig. 10-10

10-2. Zener diode (RZ6.2EBH)

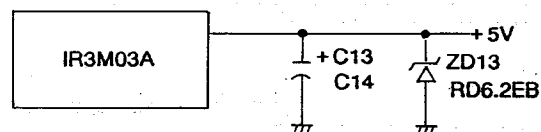


Fig. 10-11

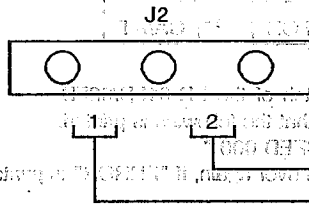
If +5V supply were to increase incidentally, it might destroy the LSI and IC to which +5V is supplied. To prevent this, a zener diode (ZD13) is provided from +5V to GND. after completion of servicing, this must be checked for damaged.

10-3. RAM board handing (ER-33MB)

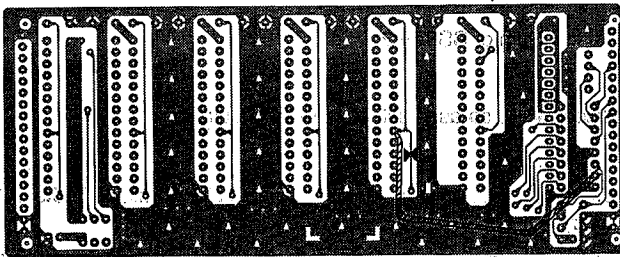
BANK RAM chips of the ER3310/3311 are mounted on the RAM PWB which is located on top of the main PWB. Specific care must be taken when handling the RAM board, to prevent loss of data.

IMPORTANT:

For the circuit pattern has change for the ER-33MB since June, 1988, this new type ER-33MB can be used only for the ER-3310 and ER-3311. It is possible for the ER-3300, either the new or current type can be used. However, in this case, the jumper clip must be connected in the following way.



The PWB needs to be modified in order to use the current type ER-33MB on the ER-3310 and ER-3311. The current type can be identified from the new type in the manner next:
The current type has no jumper switch J2. The new type has a jumper switch J2.



- ✖: For IC7, cut the circuit pattern across the pin-13 and the pin-20 of RAM2.
- ▬: For IC7, connect the pin-7 with the pin-20 of RAM2 using a jumper.

• Removal

- (1) Unplug the ac cord from the wall outlet.
- (2) Attach the service battery (CKOG-6626RCZZ) to the service battery connector on the RAM PWB.
- (3) Set the reset switch (jumper connector), on the RAM PWB to the on position.
- (4) Remove the RAM PWB from the main PWB.

IMPORTANT:

The PWB must be lifted up uniformly with the main PWB. Prying it loose may damage the connector.

• Replacing procedure

Observe the reverse sequence of the above, with the ac cord disconnected from the wall outlet.

• Use of SIO

The ER3310/3311 employs the data transfer function as standard equipment. If data is transferred to another register using this function will assure protection of the data. For details, please refer to the paragraph 11, discussing the data transfer function. However, the SIO may not be used unless the CPU is operating properly.

10-4. Cabinet replacement and removal

It is essential to disconnect the ac cord from the wall outlet.

- (1) Keep the popup display in the up position before removing the cabinet.
- (2) Before securing the cabinet, make sure that the main PWB to display PWB connector (13-pin) is firmly connected, and that any cables are not caught in or touching the heat sink of the power supply unit of the main PWB.

10-5. Printer protect fuse

Check the following before replacing the F3 fuse (1.5A), when it has been blown.

- ③ Trouble in the printer driver
- ③ Short in the dothead.
- ③ Trouble in the driver pre-stage logic circuitry

10-6. Printer motor lock

In the ER3310/3311, 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) Depress the receipt or journal feed keys to stop the beeping.
 - 2) Disconnect the AC cord from the wall outlet. And remove the cause.
 - 3) When power is restored, the following is displayed.
- The image shows a rectangular display area with the text "MOTOR LOCK" and the number "10" below it. The text is in a bold, sans-serif font.
- Fig.10-12
- 4) Depress the [CL] key to return the ER3310/3311 to the point where the cause happened. The power failure symbols will be printed after a line feed.

11. DOWN LOAD FUNCTION

11-1. General

As one of ER-3310/3311 functions, it is possible to transfer RAM data (bank RAM, SSP) between the ER-3310/3311's, 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-3310's or ER-3311's.

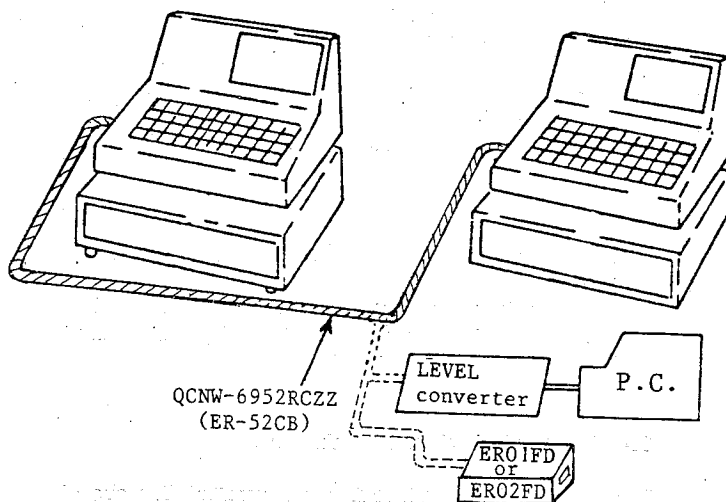


Fig. 11-1

11-2. SIO interface specification

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

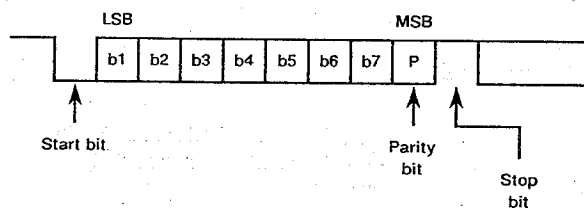


Fig. 11-2

NOTE: Items marked with an asterisk (*) can be changed in the SRV mode (SRV job #995).

11-3. Location of connector pins

QCNW-6952RCZZ (ER-52CB)

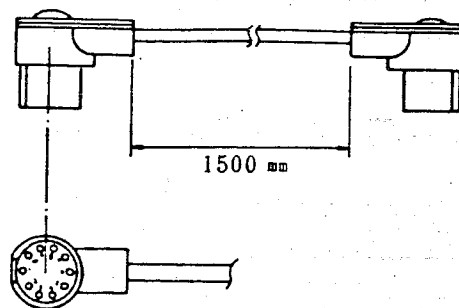


Fig. 11-3

No.	Signal	Signal	No.
1	GND	GND	1
2	NC	NC	2
3	ER	ER	3
4	CD	CD	4
5	RR	RR	5
6	CS	CS	6
7	DR	DR	7
8	RXD	RXD	8
9	TXD	TXD	9
10	RS	RS	10

Interfacing signals

Pin NO.	Signal name	In/Out	On leve	Description
1	GND	—	—	Signal ground
2	NC	—	—	Not connected
3	ER	Out	Low	Equipment ready (power on)
4	CD	In	Low	Carrier detect
5	RR	Out	Low	Receiver ready
6	CS	In	Low	Clear to send
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	RS	Out	Low	Request to send

11-4. Application specification

The following jobs are provided in the SRV mode for serial data transfer:

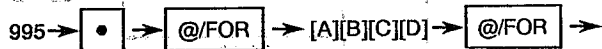
- (1) Sio handler initial setting
- (2) SSP data and bank RAM transmission
- (3) SSP data, bank RAM data, reception

11-4-1.

[JOB#995]

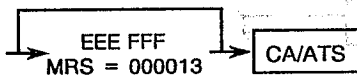
SIO handler initial value (down load specification) is entered for transmission

Key operation



MRS = 6700

When start and codes are not on



#995-A:

Sum check	Character	Start code	Parameter
No	Fixed length	No	0
		Yes	1
	Match	No	2
		Yes	3
Yes	Fixed length	No	4
		Yes	5
	Match	No	6
		Yes	7

#995-B: Choice of port sense

CD sense	CS sense	DR sense	Parameter
No	No	No	0
		Yes	1
	Yes	No	2
		Yes	3
Yes	No	No	4
		Yes	5
	Yes	No	6
		Yes	7

#995-C: Choice of baud rate

Baud rate (BPS)	Parameter
9600	0
4800	1
2400	2
1200	3
300	4

#995-D: Choice of code format

Bit size	Parity	Stop bit	Parameter
7 bits	Odd	1 bit	0
	Even		1
8 bits	Odd	1 bit	2
	Even		3
7 bits	Odd	2 bit	4
	Even		5

#995-EEE,FFF :

EEE*Start code

FFF*End code (character match code)

} Decimal number (0~255)

NOTES:

*: No parameter entry is needed when the start code is not used.

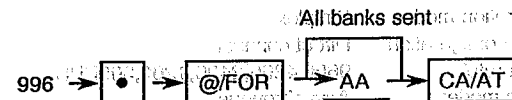
*: No parameter entry is needed when the end is not used. But, if the start code is used, any three digit number must be entered after entry of the start code.

11-4-2. Bank RAM data transmission

The contents of the bank RAM are transmitted. The size of data to be transmitted must be specified using the RAM bank count.(The SSP data are transmitted at this point)

• Key operation

MODE switch: SRV position



All banks sent

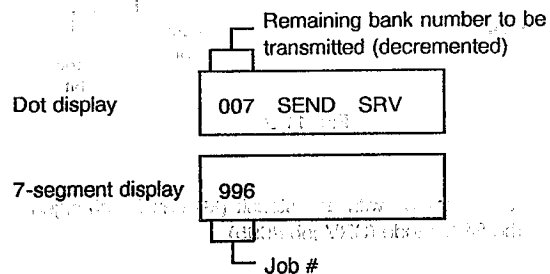
Transfer bank number*

NOTE:

*: Only the SSP data is sent when 00.

• Display

During transmission



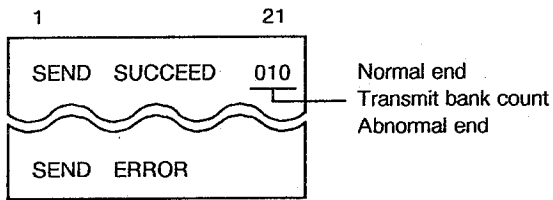
At transmission

At error:

} Returns to initial display.

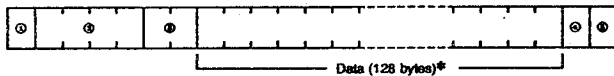
● Printout

The following message is printed on the journal when the transmission is complete.



● Data format

A single byte image of the RAM data to be transmitted is divided into a high order 4 bits and low order 4 bits and converted into ASCII code. Then, the image of the memory is sent in the following format:



(1) Start code:

SRV mode programmed. Not contained at MRS.

(2) Memory top address:

Top address of the memory to be transmitted in ASCII number.

(3) Bank No.:

Bank number of the memory to be transmitted in ASCII number. A dummy bank number "1" must be used for transmission of the SSP data.

(4) Sum check:

SRV programmed. Used at MRS.

(5) End code:

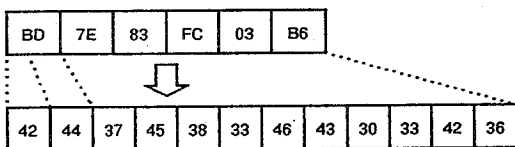
SRV programmed. Hex 0D used at MRS.

NOTE:

- In order that contents of RAM memory may not over-ride banks for this job, RAM image is sent in unit of 64 bytes from the address 2000. In other words, 128 bytes are sent at one time on the transmit data format.

RAM DATA FORMAT

Exhibit:



Code table

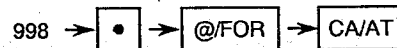
HEX	ASCII	Character
0	30	0
1	31	1
2	32	2
3	33	3
4	34	4
5	35	5
6	36	6
7	37	7
8	38	8
9	39	9
A	41	A
B	42	B
C	43	C
D	44	D
E	45	E
F	46	F

11-4-3 Reception

SSP data, bank RAM data are received.

Key operation

MODE switch: SRV position



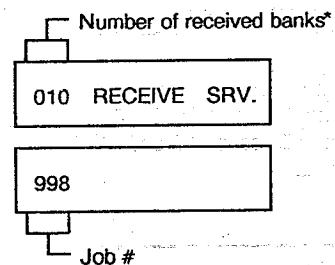
Reception continues until an END record code is recognized or a receive error occurs.

● Display

During reception

Dot display

7-segment display



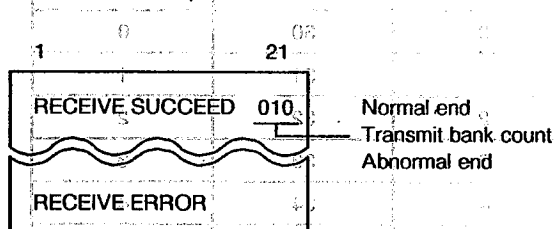
At transmission and error: Returns to the initial display.

NOTE:

- Number of banks received are incremented from "0000".

• Printout

The following message is printed on the journal when the transmission is complete.



END record

Character matching.

①	30	30	30	30	②	30	30
---	----	----	----	----	---	----	----

In the case of fixed character length.

①	30	30	30	30	②	Dummy data (128 bytes)	③
---	----	----	----	----	---	------------------------	---

(1) Start code:

SRV programmed. Not contained at MRS.

(2) End message:

Fixed to 3030.

(3) Sum check:

SRV programmed. Used at MRS.

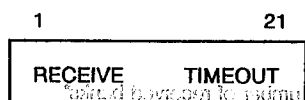
(4) End code:

SRV programmed. Not contained at MRS.

11-4-4 Cancellation of transmit/receive

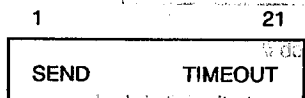
Cancellation of reception

If data is not received within 30 seconds, the receive mode is automatically cancelled and following message is printed on the journal.



Cancellation of transmission

If data is not transmitted within 30 seconds, the transmit mode is automatically cancelled and the following message printed on the journal.



Forced cancellation

Power off or disconnect the down load cable. Then, it ends in an error.

11-5 Dip switch setup of ER-01FD/02FD

1) ER-01FD

Set up as follows when the ER-3310/ER-3311 is at MRS.

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

Baud rate.9600bps.

2) ER-02FD

Set up as follows when the 01FD function of the ER-02FD.

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

ON : PC-DOS
OFF : CCP/M-86

12. TEST FUNCTIONS

12-1. General

1) This diagnostic program has been developed for diagnosing machine functions in the field. The program is contained within the ER-3310/3311.

The diagnostic program is stored in the external ROM which will be executed by the CPU (HD63A03) which requires the following diagnostic operations:

- Proper power supply voltages are mandatory for logic circuits (+5V, POF, 12V, 24V.).
- CPU input/output pins, CPU internal logic, KDC, MPCA, PRC, LZ92A42, address decoder, address bus, data bus, and common ROM/RAM must be working properly.

12-2. Operational procedure

To start the diagnostic program, you must enter the following command.

3-digit test item number → [CA/AT] key in the SRV mode.

The key assignment must be properly set and a part of ROM and RAM must be operating properly to go into this mode because the control jumps to the program area in the SRV mode. A master reset must be performed before operating the ECR for the first time. After any option is installed, a program reset is required. When the master reset or program reset is performed, be sure to check the printout on the journal paper.

Master reset: Plug in the ECR with the [JF] key depressed in the SRV mode.

Journal print:

Program reset: Plug in the ECR in the SRV mode.

Journal print:

SRV mode display:

Main display:

0.00

Popup display:

0.00

13-3. Test command list

With the following command entry, the test starts.

Code	Description
100	Display test-1
101	Key, clerk, and switch position code test display test
102	M-2640 printer test-1
103	M-240 printer test-1
104	Keyboard test
105	Mode switch test
106	Validation printer sensor and near end sensor test
107	BTF and IFV test
108	Calendar clock test
109	SSP test
110	Drawer-1 open and sensor test
111	Drawer-2 open and sensor test
112	Drawer-3 open and sensor test
113	Drawer-4 open and sensor test
114	M-2640 printer test-2
115	M-240 printer test-2
116	Display test-2
117	SIO test-1
118	SIO test-2
120	Common RAM test
130	Common ROM test

Code	Description
200 207	Bank RAM chip test thru 1 chip = 8 banks (Bank: 8 to 63, address: 2000H to 2FFFH)
300 301 302 303 304 305 306	Bank RAM unit test (Bank: 2 to 15) Bank RAM unit test (Bank: 2 to 23) Bank RAM unit test (Bank: 2 to 31) Bank RAM unit test (Bank: 2 to 39) Bank RAM unit test (Bank: 2 to 47) Bank RAM unit test (Bank: 2 to 55) Bank RAM unit test (Bank: 2 to 63)
400 401	Option ROM test (ROM 2: bank 8 to 11) Option ROM test (ROM 3: bank 12 to 15)

[1] Display test-1

① Key operation

100 → [CA/AT]

② Functional description

The following is displayed:

Dot display unit

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲
0123456789ABCDEF

7-segment display unit

0 1 2 3 4 5 6 7 8 9 -

Customer display

3 4 5 6 7 8 9 -

③ Check the following items:

- Check for proper activation of display elements.
- Check for blur, uneven illumination, and partial omission.

④ Test termination

Press any key. The test terminates with the test end message printed.

100

Test termination print

[2] Key, clerk, and switch position code test

① Key operation:

101 → [CA/AT]

② Functional description

Key, clerk, and switch codes are displayed on the dot display unit.

Dot display unit

CL ○○ SW ○ K ○○○

Key code
Receipt switch code
Clerk code

- ③ Check the following items:
Change key and switch positions for proper display activation.

Clerk code : 00 (off state)
01 (clerk A)
02 (clerk B)
04 (clerk D)
08 (clerk E)
Receipt switch code : 0 (on state) 1 (off state)
Key code : --- (simultaneous two key depression, invalid entry)
000

NOTE: Refer to JOB#104, key soft code, for the key code.

- ④ Test termination
Change the MODE switch position other than SRV position to terminate the test. The test termination message is printed.

101
Test termination print

[3] M-2640 printer test-1

- ③ Key operation
102 → [CA/AT]
- ② Functional description
Regardless of the receipt (on/off) switch, 21 digits of "Z" are printed on five lines of the receipt and journal.
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:
I) Print starting position of each line must be on the same column.
II) On both the receipt and journal, extension of print is not permitted. Pay special attention on the right side of the receipt and on the left side of the journal.
III) Print quality Check the print quality by using the JOB#114 printer test-2.
IV) Check the action of the paper feed, LOGO stamping, and auto cutter.
V) Both margins must be in alignment.

<PRINT SAMPLE>

YOUR RECEIPT

THANK YOU

- ④ Test termination
The test automatically terminates without termination message print. No error print will be produced if an error was met.

[4] M-240 printer test-1

- ③ Key operation
A 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:
I) Print starting position must line up in the same column.
II) Check the print quality.
III) 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

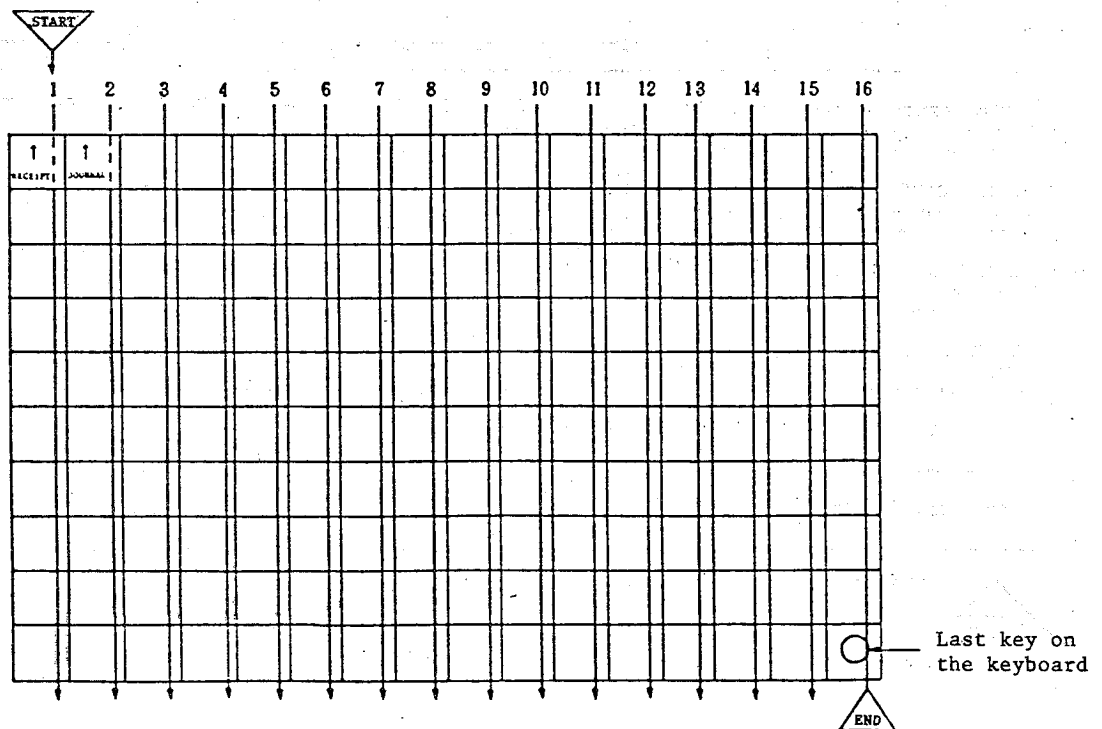
- ③ Key operation
104 → [CA/AT]
- ② Functional description
Key actions of the standard version ER-3310/11 are tested. Press keys on the keyboard in the order given in the figure below. If the test has been successful, the test terminates with the printout showing correct action of every key. If an error 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.

Key code

↑ RECEIPT	↑ JOURNAL	28	38	48	58	68	78	88	98	108	118	128	138	148	158
9	18	27	37	47	57	67	77	87	97	107	117	127	137	147	157
8	17	26	36	46	56	66	76	86	96	106	116	126	136	146	156
7	16	25	35	45	55	65	75	85	95	105	115	125	135	145	155
6	15	24	34	44	54	64	74	84	94	104	114	124	134	144	154
5	14	23	33	43	53	63	73	83	93	103	113	123	133	143	153
4	13	22	32	42	52	62	72	82	92	102	112	122	132	142	152
3	12	21	31	41	51	61	71	81	91	101	111	121	131	141	151
2	11	20	30	40	50	60	70	80	90	100	110	120	130	140	150
1	10	19	29	39	49	59	69	79	89	99	109	119	129	139	149



[ER-3311]

Key code

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

↑ RECEIPT	↑ JOURNAL	L1														NS	CONV
			12	13	14	15	16	17	18	19	20	21	22			FS	FS
		L2	1	2	3	4	5	6	7	8	9	10	11			SHIFT	TEND
SLIP	PRINT	L3	RCPT						PROMO #1	PROMO #2	RA	PD				CH4	CH5
SERV	CASH		PLU/SUB						5	10	15	20				CH2	CH3
TABLE	TAX		TAX1 SHIFT						4	9	14	19				CHK	CH1
COVER CMT	SCALE		E1	E2					3	8	13	18				CA2	TRAY SBTL
PB	TIP		%1	%2					2	7	12	17				#/ SBTL	MDSE SBTL
CB	SRVC		RFND	VOID												CA/AT	

START

END

[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 ~ 8, E, F

mode: SRV (S) PGM2 PGM1 OFF OP X/Z REG
x : 09 00 01 02 (0E) 03 04

SRV Z1/X2/Z2 X1 MGR
09 07 06 05

(x: 0E - intermediate position, 0F - multiple errors)

If a mode was detected in the order other than mentioned above, or if any key is depressed, the test immediately terminates with the error print, except for an intermediate position setting. Therefore, the MODE switch must be rotated exactly as directed. The MODE switch may be quickly returned to the SRV position as no check is done until the switch returns to the SRV position. Note that no code is displayed.

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 - - - -
Test termination print		Error print (any key depression)

[7] Validation sensor and near end sensor test

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.

④ Test termination

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

106
Test termination print

[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.

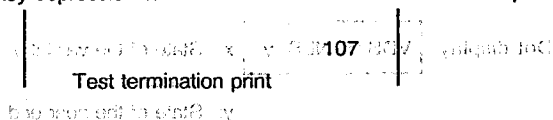
Check the on and off actions.

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/z	Description
IFV	O	Slip printer or slip printer interface not in connection
	C	Slip printer and slip printer interface is 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.



NOTE-1 : The slip printer and the slip printer interface board must be connected for this test. Otherwise, it will result in "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 / clock test

④ Key operation

108 → [CA/AT]

④ Functional description

After setting "23 hours 59 minutes 57 seconds" in the calendar clock, the time is displayed for the test of the calendar timer controller (RP5C15).

Dot-display:

TIMER CHECK

Popup display:

23 - 59 → 00 - 00

④ Check the following items:

- As the time is displayed on the numeric display unit, check for correct time display.
- Check to see that "-" inserted between hours and minutes blinks in an interval of 0.5 second.
- Check change in time (23-59 to 00-00 within 3 to 4 seconds, for instance).

④ Test termination

Any key depression terminates the test with the termination print.



NOTE-1 : The date and time must be re-programming again after completion of this test, the test will destroy the current date and time.

[10] SSP test

④ Key operation

109 → [CA/AT]

④ Functional description

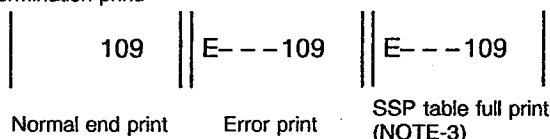
If an SSP is programmed, its contents are automatically checked and the result is printed.

④ Check the following items:

Check printing of the termination message.

④ Test termination

The test terminates automatically after printing the termination print.



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

④ Key operation

110 ~ 113 → [CA/AT]

④ Functional description

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

Drawer opened : O indicated

Drawer closed : C indicated

110: Drawer-1

111: Drawer-2

112: Drawer-3

113: Drawer-4

④ Check the following items : The following are tested.

- Check opening of the specified drawer.
- 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 : X : 0~3

[12] M-2640 printer test-2

④ Key operation

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

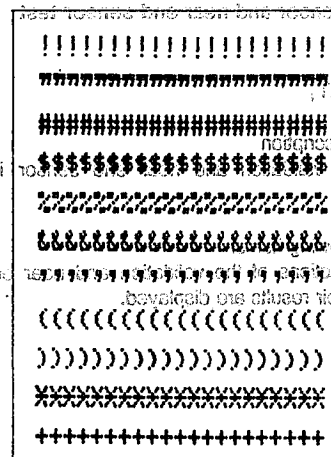
④ Functional description

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.

④ Check the following items:

- Check to see that every line started to print in the same column.
- Check to see that nothing is printed out of the print zone on both receipt and journal.
- 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 with the termination message.

[13] M-240 printer test-2

④ Key operation (Receipt switch at ON position)

115 → [CA/AT]

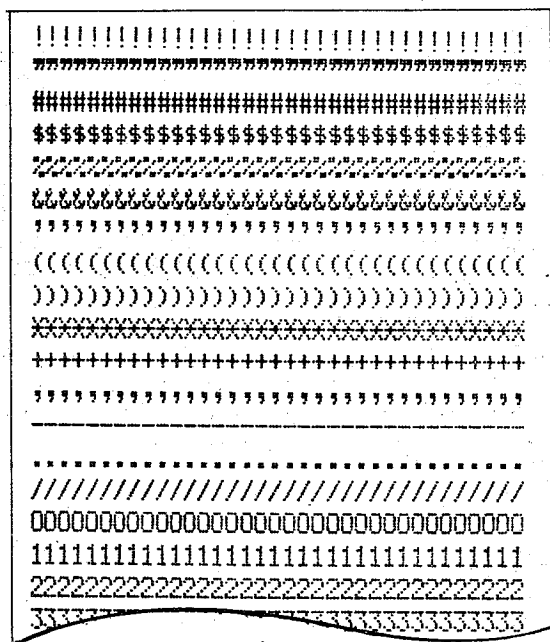
④ Functional description

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.

④ 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 with the termination message.

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

④ Key operation

116 → [CA/AT]

④ Functional description

For both the dot display unit and the 7-segment display unit, character display and LED display are shifted in the following order.

[Test sequence]

1. Dot display: Same character displayed on the entire display row (all characters).
2. Dot display: "8" shifts from the first to the sixteenth digit one at a time.
3. Dot display: "▲" sign shifts from the first to the sixteenth digit one at a time.
4. 7-segment display: Same character displayed on the entire display row (0 ~ 9,).
5. 7-segment display: "8" shifts from the first to the eleventh digit one at a time.
6. 7-segment display: "▼" sign shifts from the first to the eleventh digit one at a time.
7. 7-segment display: "." shifts from the first to the eleventh digit at one a time.
8. 7-segment display: Common signal turns on and off.

Any key depression halts to display and depression of any key again resumes the test.

④ Check the following items:

- I) Check for correct displaying.
- 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.

	116	
Test termination print		

[15] Serial interface test-1

④ Key operation (Receipt switch at ON position)

117 → [CA/AT]

④ Functional description

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

Test-1: Checks RS <--> CD, RR <--> CS,
ER <--> DR.

Test-2: Checks TXD <--> RXD.

Dot-display: SIO CHECK

④ Check the following items:

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

④ Test termination

The test terminates after checking with the termination message.

117	EX----	117
-----	--------	-----

Test termination print X = 1: Test-1 error

- 2: Send and receive data unmatched error
- 3: Timer overflow error

[16] SIO test-2

- ③ Key operation
118 → [CA/AT]

④ 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.

[17] Common RAM test

- ③ Key operation
120 → [CA/AT]

Functional description

The following checks are done for the common RAM area and bank RAM are within the common RAM.

1) Common area test

The 256 bytes of general purpose working area within the common RAM, are tested in the read/write test mode in three phases of pass-1 thru pass-3.

Pass-1: The entire check area is written with the test data 55H. After writing the test data, the data stored is verified.

Pass-2: Each byte of the test data 55H within the check area is read one at a time and replaced by a new test data AAH. At the same time 55H is verified to read, AAH is written and checked.

Pass-3: Each byte of the test data AAH within the check area is read one at a time and replaced by a new test data 00H. At the same time 55H is verified to read, 00H is written and checked.

2) Bank area test

With this test, single byte read/write test, check point read/write test, and bank select test are carried out:

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

The following is done for bank 2 thru 7 (address: 2000 = 2FFFFH).

- 1) Data save
- 2) 55H write check to check for proper writing (NOTE-1).
- 3) AAH write check to check for proper writing (NOTE-1).
- 4) Data restore

The above tests are carried out to each byte.

2) Check point read/write check

The following tests are carried out for check address of each bank.

Check pass-1: At the same time the data in the check address is saved, the test data 55H is written, write checked, and the data is then verified.

Check pass-2: Upon checking the data 55H written in the check pass-1, a new test data AAH is written and write checked. The data in the check address is compared with the test data.

Check pass-3: Upon checking the data AAH written in the check pass-2, the saved data are restored.

NOTE-1: E1 is printed for this error.

NOTE-2: E2 is printed for this error.

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

ii) Bank select check

The following tests are conducted regarding the bank select check address (2000H) of all banks (2 to 7). Check pass-1: At the same time the data in the check address is saved, the test data 55H is written and write checked (NOTE-1). Check pass-2: At the same time the data 55H stored in Check pass-1 is read to check, a new test data AAH is written and write checked (NOTE-3). Check pass-3: At the same time the data AAH is read to check, the data saved in check pass-1 is restored (NOTE-3).

NOTE-1: E1 is printed for this error.

NOTE-3: E3 is printed for this error.

③ Check the following items:

Check the printout after the test.

④ Test termination

The test terminates after producing the printout.

Termination print:

Normal test termination	120	
Error termination	E- - - - 120	
Error kind print descriptio		
Error-1 printout	E1 - - - 0	0:Common
Error-2 printout	E2 - - - 0	RAM
Error-3 printout	E3 - - - 0	

NOTE: When an error has been encountered, the test terminates with the error kind (E1 to E3) printed.

[18] Common ROM test

- ③ Key operation
130 → [CA/AT]

④ 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 the termination message.

Normal
termination print
Error termination

130 33 Y XX
E-130 33 Y XX
XX : ROM version number
Y : ROM location

[19] Bank RAM test

Before this test, clear the in-line mode and do a program reset.
Note that the contents of the memory are destroyed when an in-line is accessed during this test.

③ Key operation

20X → [CA/AT] (X : 0~7)

JOB# NO.	RAM# NO.	Check RAM bank	NOTE	PWB LOCATION
200	000	02 ~ 07	Common RAM (main PWB)	IC30
201	001	08 ~ 15	Option RAM (ER-01RA) on main PWB	IC15
202	002	16 ~ 23	Option RAM (ER-33MB)	RAM1
203	003	24 ~ 31	Option RAM (ER-01RA)	RAM3
204	004	32 ~ 39	Option RAM (ER-01RA)	RAM4
205	005	40 ~ 47	Option RAM (ER-01RA)	RAM6
206	006	48 ~ 55	Option RAM (ER-01RA)	RAM5
207	007	56 ~ 63	Option RAM (ER-01RA)	RAM2

③ Functional description

RAM chips (common RAM bank area) / option RAM chip on the main board and RAM chips on the ER-33MB memory option are tested one chip at a time.

With this test, single byte read/write test, check point read/write test, and bank select test are carried out.

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

The following is done for bank 2 thru 7 (address: 2000 = 2FFFFH).

- 1) Data save
- 2) 55H write check to check for proper writing (NOTE-1).
- 3) AAH write check to check for proper writing (NOTE-1).
- 4) Data restore

The above tests are carried out to each byte.

2) Check point read/write check

The following tests are carried out for check address of each bank.

Check pass-1 : At the same time the data in the check address is saved, the test data 55H is written, write checked, and the data is then verified.

Check pass-2 : Upon checking the data 55H written in the check pass-1, a new test data AAH is written and write checked. The data in the check address is compared with the test data.

Check pass-3 : Upon checking the data AAH written in the check pass-2, the saved data are restored.

NOTE-1 : E1 is printed for this error.

NOTE-2 : E2 is printed for this error.

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

ii) Bank select check

The following tests are conducted regarding the bank select check address (2000H) of all banks (2 to 7).

Check pass-1 : At the same time the data in the check address is saved, the test data 55H is written and write checked (NOTE-1).

Check pass-2 : At the same time the data 55H stored in Check pass-1 is read to check, a new test data AAH is written and write checked (NOTE-3).

Check pass-3 : At the same time the data AAH is read to check, the data saved in check pass-1 is restored (NOTE-3).

NOTE-1 : E1 is printed for this error.

NOTE-3 : E3 is printed for this error.

③ Check the following items:

Check the printout after the test.

③ Test termination

The test terminates after producing the printout.

Termination print:

Normal test termination	20X	20X:JOB#
Error termination	E- - - - 20X	NO.(200~207)
Error kind print description		
Error-1 printout	E1 - - - Y	Y:RAM#
Error-2 printout	E2 - - - Y	NO.(0~7)
Error-3 printout	E3 - - - Y	

NOTE : When an error has been encountered, the test terminates with the error kind (E1 to E3) printed.

[20] BANK RAM UNIT TEST

Before this test, clear the in-line mode and do the program reset.
Note that the contents of the memory are destroyed when an in-line is accessed during this test.

③ Key operation

30X → [CA/AT] (X : 0~6)

JOB# NO.	RAM# NO.	Check RAM bank	Check RAM bank
300	0, 1	02 ~ 15	Common RAM + ER-01RA (main PWB)
301	0~2	02 23	Common RAM + ER-33MB
302	0~3	02 31	Common RAM + ER-01RA, x2
303	0~4	02 39	Common RAM + ER-01RA, x3
304	0~5	02 47	Common RAM + ER-01RA, x4
305	0~6	02 55	Common RAM + ER-01RA, x5
306	0~7	02 63	Common RAM + ER-01RA, x6

③ Functional description

RAM chips (common RAM bank area) on the main board and RAM chips on the ER-33MB memory option are tested one chip at a time.

With this test, single byte read/write test, check point read/write test, and bank select test are carried out.

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

The following is done for bank 2 thru 7 (address: 2000 ~ 2FFFFH).

- 1) Data save
- 2) 55H write check to check for proper writing (NOTE-1).
- 3) AAH write check to check for proper writing (NOTE-1).
- 4) Data restore

The above tests are carried out to each byte.

2) Check point read/write check

The following tests are carried out for check address of each bank.

Check pass-1 : At the same time the data in the check address is saved, the test data 55H is written, write checked, and the data is then verified.

Check pass-2 : Upon checking the data 55H written in the check pass-1, a new test data AAH is written and write checked. The data in the check address is compared with the test data.

Check pass-3 : Upon checking the data AAH written in the check pass-2, the saved data are restored.

NOTE-1 : E1 is printed for this error.

NOTE-2 : E2 is printed for this error.

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

ii) Bank select check

The following tests are conducted regarding the bank select check address (2000H) of all banks (2 to 7).

Check pass-1 : At the same time the data in the check address is saved, the test data 55H is written and write checked. (NOTE-1).

Check pass-2 : At the same time the data 55H stored in Check pass-1 is read to check, a new test data AAH is written and write checked. (NOTE-3).

Check pass-3 : At the same time the data AAH is read, the data saved in check pass-1 is restored. (NOTE-3).

NOTE-1 : E1 is printed for this error.

NOTE-3 : E3 is printed for this error.

③ Check the following items:

Check the printout after the test.

④ Test termination

The test terminates after producing the printout.

Termination print:		
Normal test termination	30X	30X:JOB#
Error termination	E---	30X
Error kind print description		NO.(300~306)
Error-1 printout	E1---	Y
Error-2 printout	E2---	Y
Error-3 printout	E3---	Y
		Y:RAM#
		NO.(0~7)

NOTE : When an error has been encountered, the error kind (E1 to E3) printed and the test resumes. Once an error has occurred in a RAM, no error is printed even if another error is encountered. Those errors will be printed after the completion of the test.

[21] Option ROM test (ROM address 4000H thru 7FFFH)

③ Key operation

40X → [CA/AT] (X : 0~5)

JOB# NO.	RAM BANK	Remarks
400	8~11	4 bank, 64 KB
401	12~15	4 bank, 64 KB

③ Functional description

ROM chips on the industry board specified by JOB# are tested in the sumcheck mode one chip at a time.

③ Check the following items:

The test terminates with the termination message printed.

④ Test termination

Normal test termination print

Normal	40X	33 X YZ
termination print	E 40X	33 X YZ
Error termination		XX : ROM version number

40X : JOB#
X : ROM location
YZ : ROM version number

13. CIRCUIT DESCRIPTION

13-1 Circuit block diagram

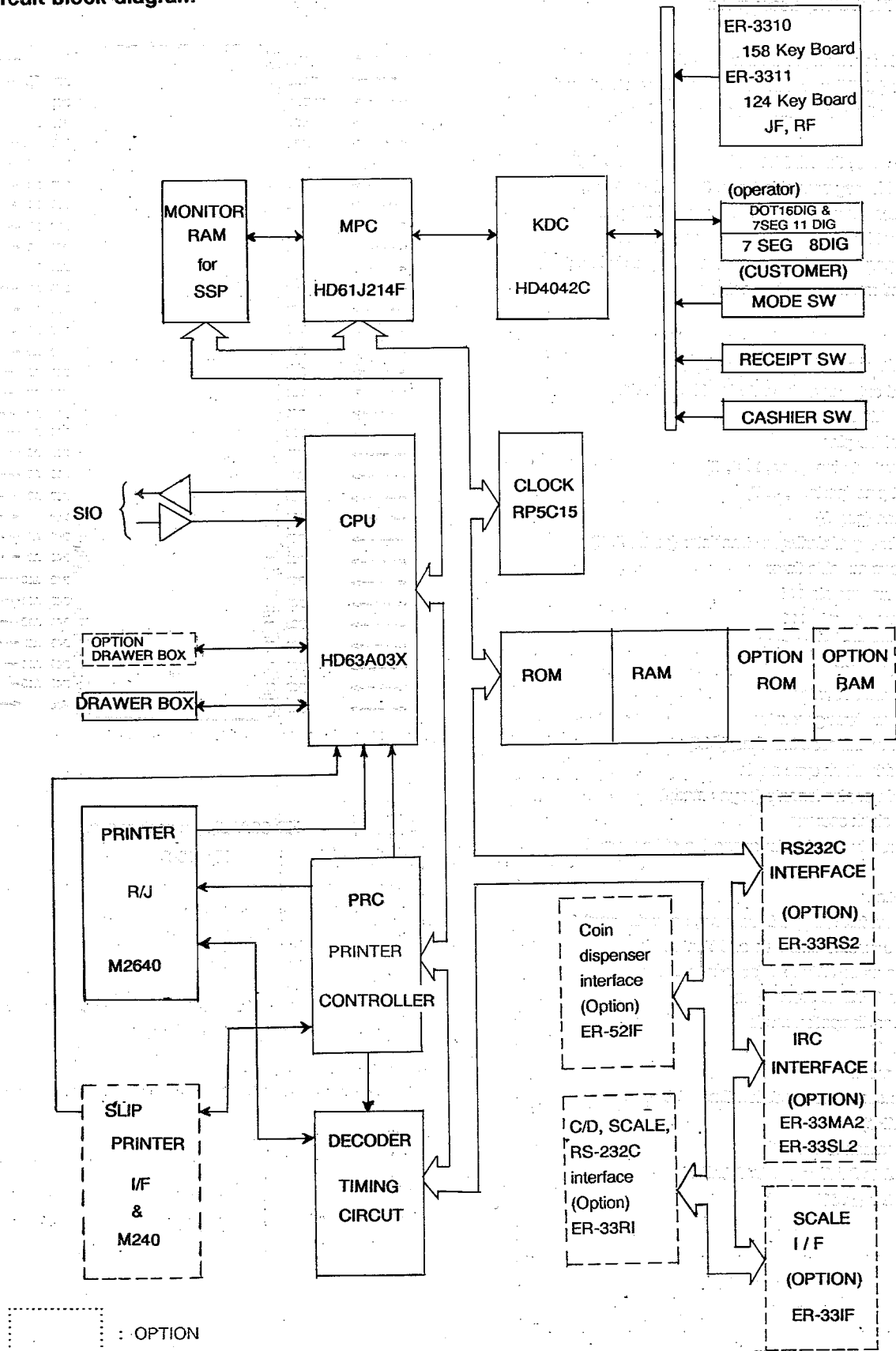


Fig 13-1

13-2 Description of main LSI's

2) Pin configuration

13-2-1 CPU (HD63A03X) description

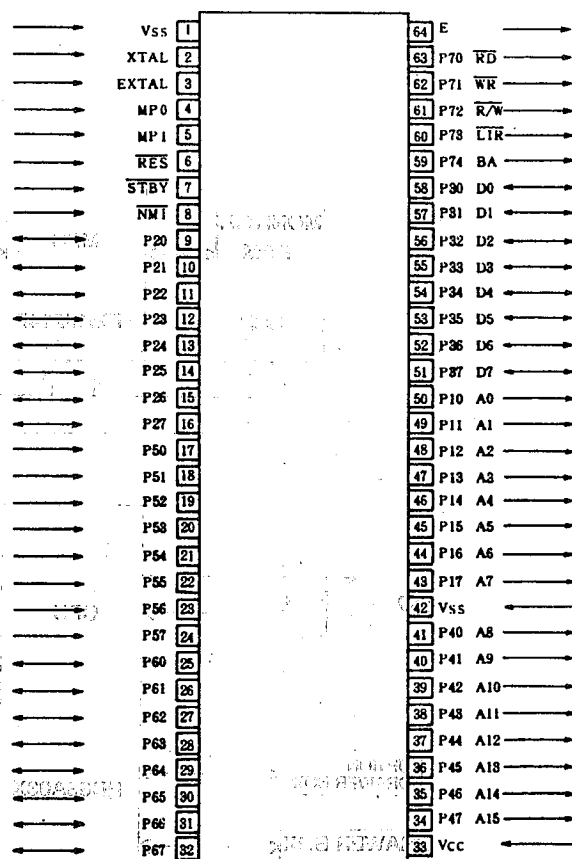
The HD63A03X is a high performance 8-bit CMOS microprocessor (MCU) which incorporates enhanced internal function and has the command codes compatible with the HD6301V1.

Apart from the CPU, the HD63A03X incorporates the 192-byte 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 register X 1
 - Free running counter X 1
 - Output compare register X 1
- 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 function for accessing of low speed memory
- Halt function
- Error detect function (address error, op code error)
- Interrupt cause...3 externals and 7 internals.
- Operation mode...Mode 1 (expansion mode)
- Maximum 65KB address space
- Low power dissipation mode
 - Sleep mode
 - Standby mode
- Minimum command execution time...0.5μs
 - (f = 2.0MHz)
- Wide operation range
 - VCC = 3 to 6V (f = 0.1 to 0.5MHz)
 - VCC = 5V ± 10%



HD 63A03X pin configuration

Fig. 13-2

3) Block diagram (HD63A03X)

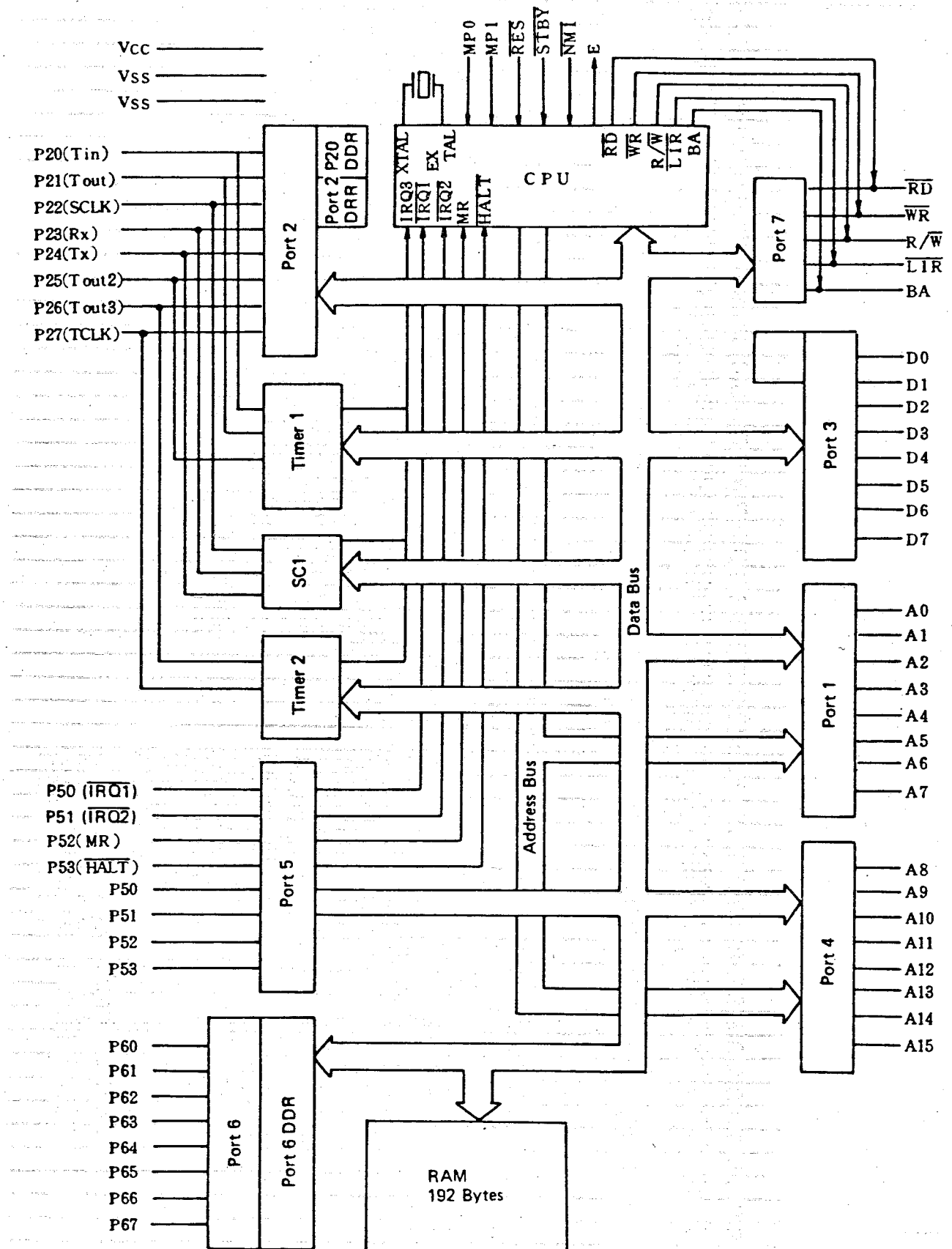


Fig. 13-3

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	CS	In	SIO control signal (Clear to send)
10	P21	RS	Out	SIO control signal (Request to send)
11	P22	RR	Out	SIO control signal (Receive ready)
12	P23	RX	In	Serial data input
13	P24	TX	Out	Serial data output
14	P25	PX1	Out	
15	P26	PX2	Out	
16	P27	STOP	Out	System reset output. Normally, high
17	IRQ1	POF	In	Interrupt input
18	IRQ2	MPCRQ	In	Peripheral device interrupt input
19	MR	MRS	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	CD	In	SIO control signal (Received line signal detector)
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	-	-	Not used.
31	P66	SOSE	In	Not used
32	P67	ARM	In	Alarm 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

NOTE:
(*) Standby mode
All lines go to high impedance except for power on XTAL, EXTAL.

NOTE:
(*) Standby mode
All lines go to high
impedance except for
power on XTAL.
EXTAL.

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)

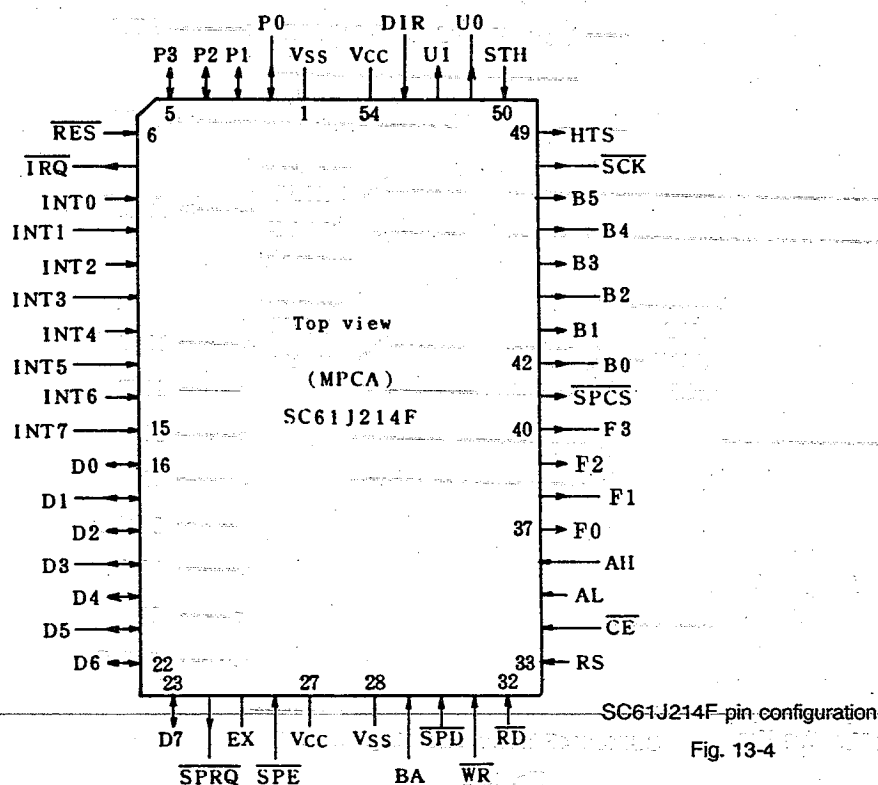
13-2-2 SC61J214F description

This microchip is a CMOS gate array (500 gates) incorporated semi-custom chip that contains the HD63A03X peripheral circuits and is called the memory mapping and peripheral controller which is called MPCA.

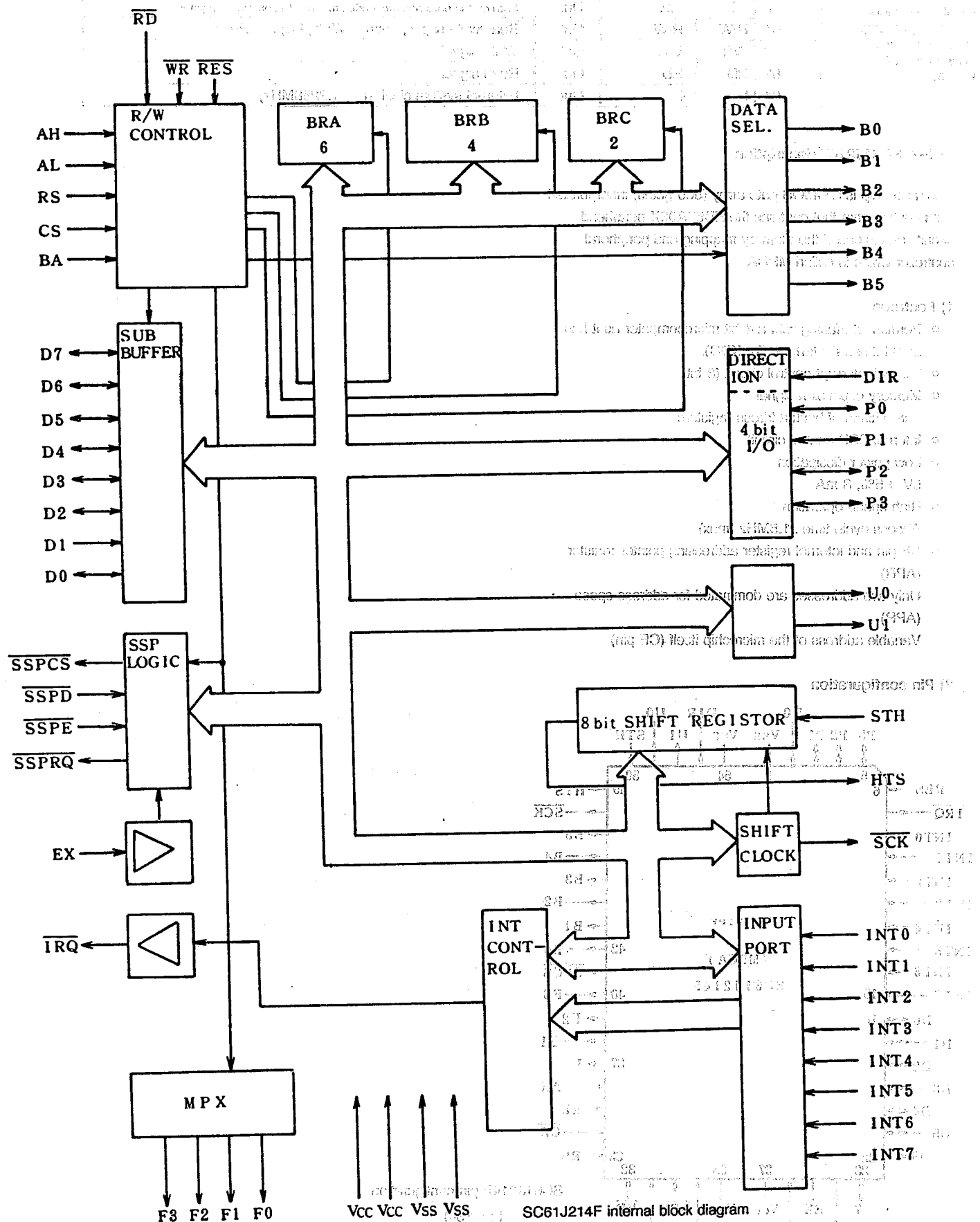
1) Features

- Permits interfacing with a 4-bit microcomputer as it has an 8-bit serial interface (for KDC).
- Internal interrupt control circuit (8-bit)
- Memory expansion signal
Three kinds of bank address registers
- Internal SSP control circuit
- Low power dissipation
5V $\pm$ 5%, 8 mA
- High speed operation
Access cycle time...1.5MHz (max)
- CE pin and internal register addressing pointer register (APR)
Only two addresses are dominated for address space (APR).
Variable address of the microchip itself (CE pin)

2) Pin configuration



3) Block diagram (SC61J214F)



SC61J214F internal block diagram

Fig. 13-5

4) Pin description (SC612J214F)

Pin No.	Symbol	Signal name	In/Out	Function
1	GND	GND	In	0V
2	P0	IFV	In	Slip printer sense signal
3	P1	TOF	In	Slip paper sense signal
4	P2	BOF	In	Slip paper sense signal
5	P3	PIX	In	
6	RES	RESET	In	Reset input, active low
7	IRQ	MPCRQ	Out	Interrupt request output to the CPU, active low
8	INT0	SHEN	In	Interrupt input
9	INT1	KRQ	In	Interrupt input
10	INT2	—	In	Not used
11	INT3	—	In	Not used
12	INT4	PRQ	In	Interrupt input
13	INT5	TRRQ	In	Interrupt input (ER33MA2 / SL2)
14	INT6	RSRQ	In	Interrupt input (NOT USED)
15	INT7	EXINT	In	Interrupt input (ER33IF, ER33RS2)
16 23	D0 D7	D0 D7	In/Out	Data bus (D0~D7)
24	SPRQ	SPRQ	Out	SSP request signal, active low
25	EX	E	In	System clock input
26	SPE	SPE	In	SSP enable signal input, active low
27	VCC	VCC	In	+ 5V
28	GND	GND	In	0V
29	BA	BA	In	Data/address bus release signal input
30	SPD	SPD	In	SSP data
31	WR	WR	In	Write signal
32	RD	RD	In	Read signal
33	RS	A0	In	Register select signal
34	CS	MPCS	In	Chip select signal, active low
35	AL	A14	In	Address input signal
36	AH	A15	In	Address input signal
37 40	F0 F3	F0 F3	Out	Bank information output (binary) (Used for CPU expansion ROM address)
41	SPCS	SPCS	Out	Output which indicates that the CPU address is within the SSP area. (SSP chip select signal)
42 47	B0 B5	B0 B5	Out	Bank information output (used for CPU expansion RAM address)(binary)
48	SCK	SCK	Out	8-bit serial port shift clock
49	HTS	HTS	Out	8-bit serial port data output signal
50	STH	STH	In	8-bit serial port data input signal
51	U0	KDCR	Out	KDC control signal
52	U1	—	Out	Not used
53	DIR	—	Out	Not used
54	VCC	VCC	In	+ 5V

(1) General

- Command set upper compatible with HD6305 series (multiply command and direct page register added)
- 8-KB programmable ROM, with the program specification compatible with the 27256 type
- 384KB RAM
- 68 parallel I/O lines
- 16-bit programmable timer
- 16-bit reloadable timer x 2
- Serial communication interface
- Dual port RAM (slave MCU mode)
- A/D converter
- Latch port function
- Operating modes (four kinds of MCU modes)
- Maximum 65KB address space
- Power save-modes (standby, stop, wait)
- Interrupts, three externals and seven internals
- Minimum instruction execution time: 0.5 μ s ($f=2.0$ MHz)

(2) Pin configuration

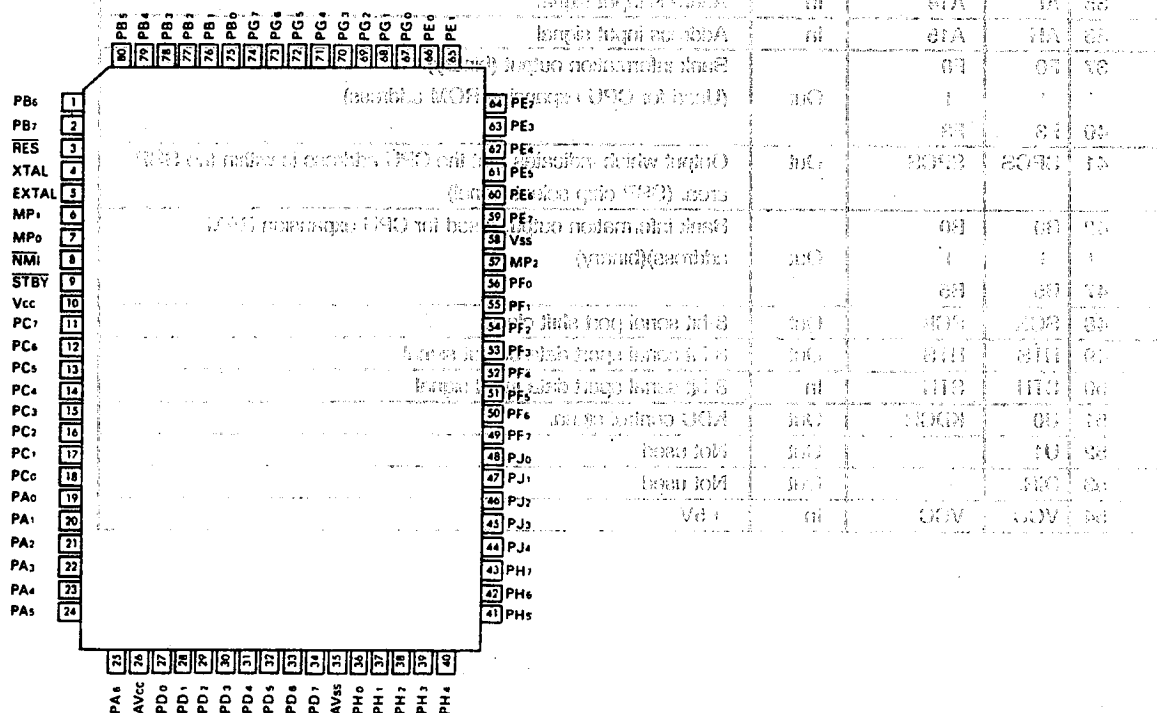


Fig. 13-6

(3) Block diagram

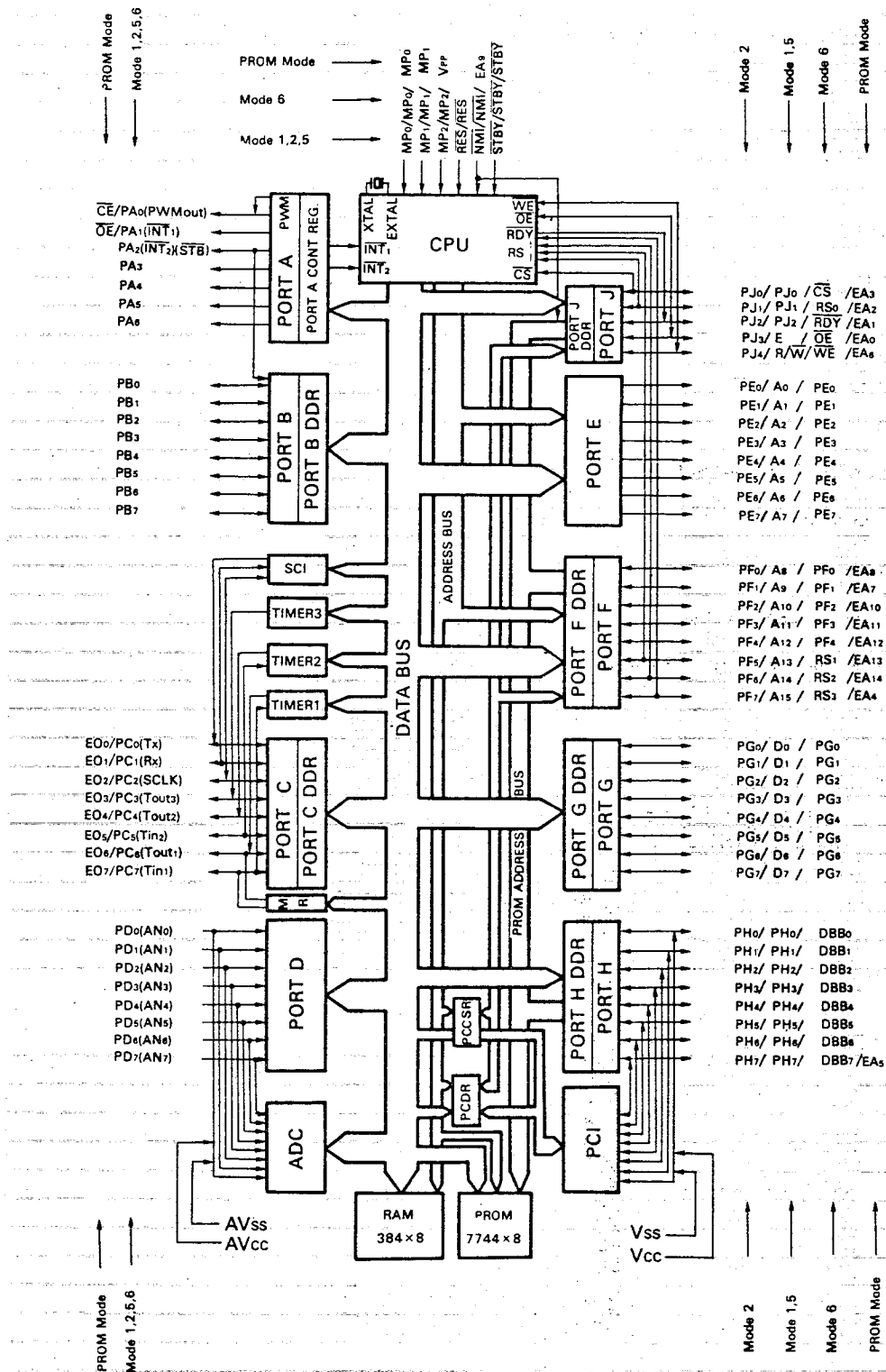


Fig. 13-7

(4) Pin description

Pin No.	Symbol	Signal name	In/Out	Function
1	—	—	—	Not used
2	—	—	—	Not used
3	RES	RESET	In	RESET Signal input
4	XTAL	XTAL	In	Clock in
5	EXTAL	EXTAL	In	Clock in
6	MP1	VCC	In	+5V
7	MP0	GND	In	GND
8	—	—	—	Not used
9	—	—	—	Not used
10	VCC	VCC	In	+5V
11	—	—	—	NC
12	—	—	—	NC
13	—	—	—	NC
14	PTRG	TRG	Out	DOTS trigger output
15	PDCR	—	—	NC
16	—	—	—	NC
17	—	—	—	NC
18	—	—	—	NC
19	MTDR	MTDS	Out	Motor drive output
20	—	—	—	NC
21	TMG	TMG	In	—
22	ACUT	—	—	NC
23	HCUT	—	—	NC
24	STMP	STMPS	Out	Stamp drive
25	SLR	SLRS	Out	Slip release drive
26	VCC	VCC	In	+5V
27	RR1	RR1	In	Reset pulse input (receipt)
28	RL1	RL1	In	Reset pulse input (journal)
29	TMG1	T&TSL	In	Printer timing pulse input
30	—	—	—	+5V
31	RL2	RSL	In	Reset pulse input (slip)
32	TMG2	T&TSL	In	Printer timing pulse input
33	PNE1	NE	In	Paper near end signal input
34	VSI	VP	In	Validation paper sense input
35	VSS	GND	In	GND
36	DBB0	D0	In/Out	Data bus
43	DBB7	D7	In/Out	
44	WE	WR	In	Write enable
45	OE	RD	In	Output enable
46	RDY	PRQ	Out	Printer request
47	RS0	A0	In	Register select
48	CS	PRCS	In	Chip select
49	RS1	A1	In	Register select
50	RS2	A2	In	Register select
51	RS3	A3	In	Register select
52	BOF	BOF	In	Slip paper sense (BOF)
53	TOF	TOP	In	Slip printer sense (TOF)
54	—	—	—	+5V
55	—	—	—	+5V
56	—	—	—	NC
57	MP2	VCC	In	+5V
58	VSS	GND	—	0V
59	PD8	—	—	Not used

Pin No.	Symbol	Signal name	In/Out	Function
60	PD7	DT7	Out	Dot solenoid drive signal
61	I	I	I	
65	PD2	DT2	Out	
66	PD1	DT1	Out	
67	—	—	—	Not used
68	I	I	I	
74	—	—	—	
75	—	—	—	NC
76	—	—	—	NC
77	PSEL	PSEL	Out	Printer select
78	PFJ	PFJS	Out	Paper feed (journal)
79	PFR	PFRS	Out	Paper feed (receipt)
80	SLPF	SLFS	Out	Paper feed (slip)

13-2-4 LZ92A42 description

- (1) The LZ92A42 is a CMOS gate array incorporated microchip which are used to generate printer M2640 control timing signals, which have an internal address decoder, enhancing low power dissipation in the logic circuitry, dense circuit integration, and low cost.

(2) Features

1. Supports the ER-3310/3311 address decoder.

- 4 chip select outputs
- Chip select is disabled during reset period.

2. Monitors the M2640 printer dot head drive period.

- Adjustment not required, because the use of the retriggerable digital monomulti timer.

3. Printer motor drive circuit

- Generates timing signal to prohibit simultaneous activation of the drive phototransistor and brake transistor.
- Permanent clock by detecting motor lock (cleared by reset)
- Prohibits activation of the brake transistor when the motor is locked.

4. Printer control timing signal buffer (timing pulse, reset pulse)

(3) Pin configuration

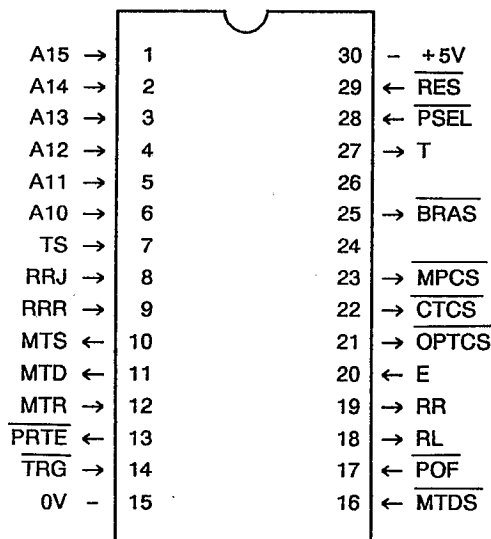


Fig. 13-8

(4) Pin description

Pin No.	Symbol	In/Out	Function
1	A15	In	Address input
2	A14	In	Address input
3	A13	In	Address input
4	A12	In	Address input
5	A11	In	Address input
6	A10	In	Address input
7	TS	In	Printer timing pulse
8	RRJ	In	Printer reset pulse (journal)
9	RRR	In	Printer reset pulse (receipt)
10	MTS	Out	Brake transistor drive signal output
11	MTD	Out	Motor drive transistor drive signal
12	MTR	In	Motor lock signal input
13	PRTE	Out	Head drive signal enable output
14	TRG	In	Trigger input
15	GND	-	0V (GND)
16	MTDS	In	Motor drive signal input
17	POF	In	Dot drive signal enable
18	RL	Out	Reset pulse output (receipt)
19	RR	Out	Reset pulse output (journal)
20	E	In	Clock input (1.22875MHz)
21	OPTCS	Out	Decoder output
22	CTCS	Out	Decoder output
23	MPCS	Out	Decoder output
24	-	Out	-
25	BRAS	Out	Decoder output
26	-	Out	-
27	T	Out	Timing pulse output
28	PSEL	In	Printer enable input
29	RES	In	Reset input
30	+5V	-	VCC (+5V)

13-2-5 VHI16L8CRAT1A (PAL 16L8A2) description

(1) General

With the PAL 16L8, address decoder and chip select circuits are established within the peripheral circuit of the ER-3310/3311.

(2) Pin configuration

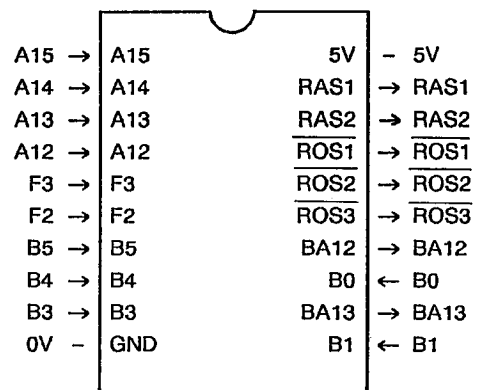


Fig. 13-9

(3) Logic

$$\overline{ROS1} = A15 + A14 \cdot \overline{F3}$$

$$\overline{ROS2} = \overline{A15} \cdot A14 \cdot \overline{F2} \cdot F3$$

$$\overline{ROS3} = \overline{A15} \cdot A14 \cdot F2 \cdot F3$$

$$RAS1 = A15 + A14 + A13 \cdot B5 + A13 \cdot B4 + A13 \cdot B3 + A13 \cdot A12$$

$$RAS2 = A15 + A14 + A13 + B5 + B4 + B3 + A12$$

$$BA12 = \overline{A13} \cdot \overline{A12} + A13 \cdot B0$$

$$BA13 = \overline{B1} + A13$$

Input signal											Output signal						
A15	A14	A13	A12	F3	F2	B5	B4	B3	B1	B0	$\overline{ROS1}$	$\overline{ROS2}$	$\overline{ROS3}$	RAS1	RAS2	BA12	BA13
1											L	H	H	L	L		
	1			0							L	H	H	L	L		
0	1			1	0						H	L	H	L	L		
0	1			1	1						H	H	L	L	L		
0	0	0	A12								H	H	H	H	L	A12	L
0	0	1	0			0	0	0	B1	B0	H	H	H	H	L	B0	B1
0	0	1	0			0	0	1			H	H	H	L	H		
		0	A12													A12	L
		1							B1	B0						B0	B1

Blank: don't care

(4) Signal names

(4)-1 Input signals

A15 - A12 : CPU address input

F3, F2 : ROM bank signal to which connected the MPC ROM bank signal.

B5, B4, B3, B1, B0 : RAM bank signal to which connected the MPC RAM bank signal.

(4)-2 Output signals

$\overline{ROS1}$: ROM1 chip select output

ROM1 consists of six banks of bank 2 to bank 7 (×16 kb) and common ROM (32 kb).

$\overline{ROS2}$: ROM2 chip select output

ROM2 consists of four banks of bank 8 to bank 11 (×16 kb).

$\overline{ROS3}$: ROM3 chip select output

ROM3 consists of four banks of bank 12 to bank 15 (×16 kb).

RAS1 : RAM1 chip select output

RAM1 is chip selected by an externally RESET combined signal.

RAM1 consists of a common RAM (8 kb) and six banks of bank 2 to bank 7 (×4 kb).

RAS2 : RAM2 chip select output

RAM2 consists of 8 banks of bank 8 to bank F (×4 kb).

BA12 : Output to connected to RAM1 address bus

For the common RAM area (A13 = "L"), A12 is issued.

For the bank RAM area (A13 = "H"), B0 is issued.

BA13 : Output connected to RAM1 address bus

For the common RAM area (A13 = "L"), 0 (= "L") is issued.

For the bank RAM area (A13 = "H"), B1 is issued.

13-3 Clock Generator

The basic clock pulse circuit is not provided in the ER-3310/3311 itself. An independent oscillation circuit is provided in each device (CPU, PRC, KDC). The clock E (1.2288MHz) is issued from the CPU for synchronization with devices.

(1) HD63A03X CPU oscillation circuit

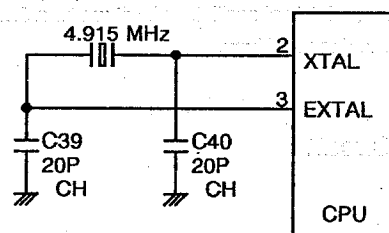


Fig. 13-10

Basic clocking is supplied from a 4.915MHz ceramic oscillator. Since the CPU has an internal oscillator circuit, the 4.915MHz ceramic oscillator output is directly supplied to the CPU.

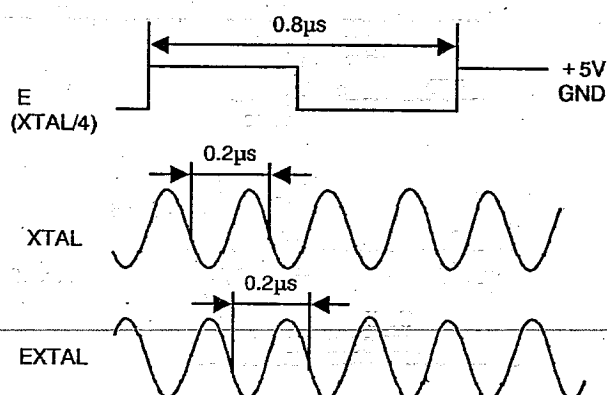


Fig. 13-11

(2) Clock oscillator (RP5C15)

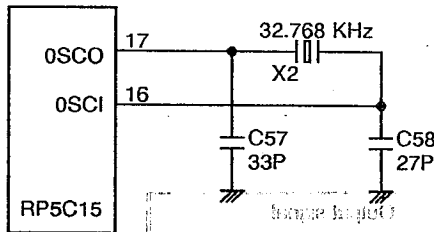


Fig. 13-12

Basic clock is supplied from a 32.768KHz crystal oscillator. Since the RP5C15 has an internal oscillator circuit, the 32.768KHz crystal oscillator is directly connected to the LSI. Because the RP5C15 is directly driven by the VRAM, oscillation is on at all times even if the power supply is off.

(3) PRC oscillator (HD63705Z0)

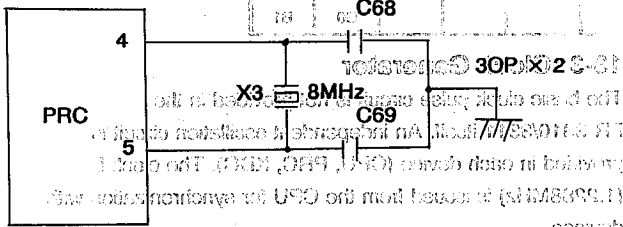


Fig. 13-13

The PRC also has an internal oscillator circuit which a 8 MHz ceramic oscillator is directly driven.

13-4 Reset Circuit

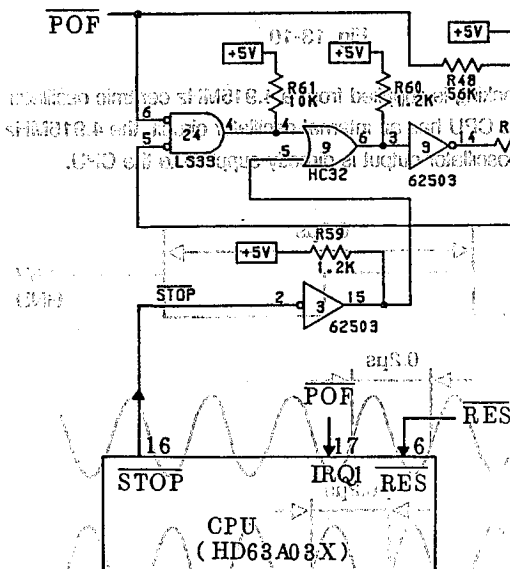


Fig. 13-15

(4) HD614042 KDC oscillator circuit

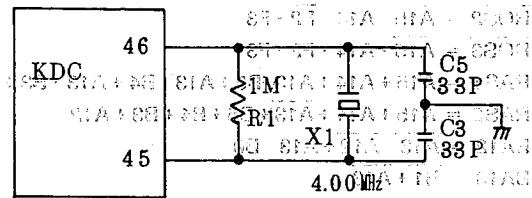


Fig. 13-14

To the KDC of the display PWB is directly connected a 4.00MHz ceramic oscillator.

The reset circuit is provided to inform devices that a power on and power down sequence is occurring and to protect data, as well as preventing malfunction.

Operational description

(1) At power on

During power on, $\overline{\text{POF}}$ is at a low level.

$\overline{\text{RESET}}$ is VRAM backed up, and are held to a low level.

While the CPU is in reset, $\overline{\text{STOP}}$ is at a high impedance.

As $\overline{\text{POF}}$ goes from low to a high level at a low to high transition of +5V and +24V, C59 starts to charge via R48 and the voltage at point (A). The voltage at point (A) reaches the threshold voltage of IC17.

$\overline{\text{RESET}}$ changes from low to a high level. Accordingly, the CPU reset is cleared so that the CPU can go into operation.

(2) $\text{VCC} (+5\text{V})$ is below 4.5V at power off.

When $\overline{\text{POF}}$ goes low, the CPU forces $\overline{\text{STOP}}$ low, so that, the pin 15 output of IC3 goes low and the charge on C59 is discharged via R47.

As C59 is discharged, $\overline{\text{RESET}}$ changes from high to low state which supplies a reset to the devices.

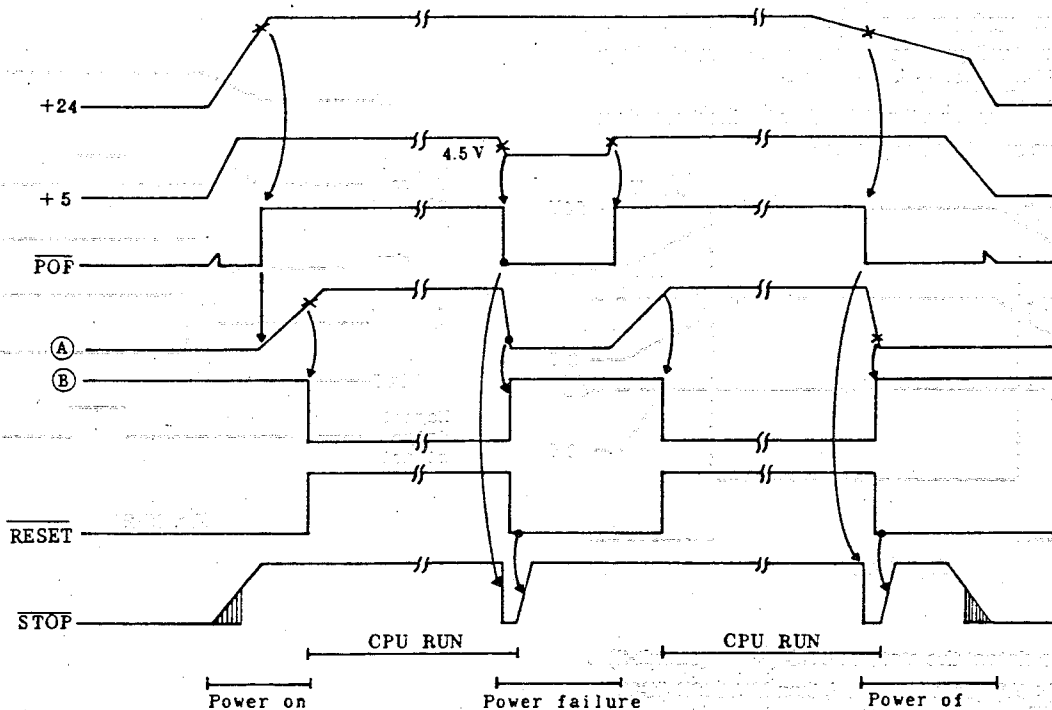


Fig. 13-16

13-5 $\overline{\text{POF}}$ Circuit

The ER-3310/3311 detects a power failure and executes the power down procedure, then it executes the power recovery procedure. It has a power down informing signal ($\overline{\text{POF}}$), to protect the system from a power failure.

When a power failure is encountered, the CPU must hold the instruction being executed after protecting the memory contents and must take action to permit recovery from a power down.

The $\overline{\text{POF}}$ circuit also prevents incidental driving of the printer and drawer solenoids.

The ER-3310/3311 $\overline{\text{POF}}$ detect circuit consists of two blocks.

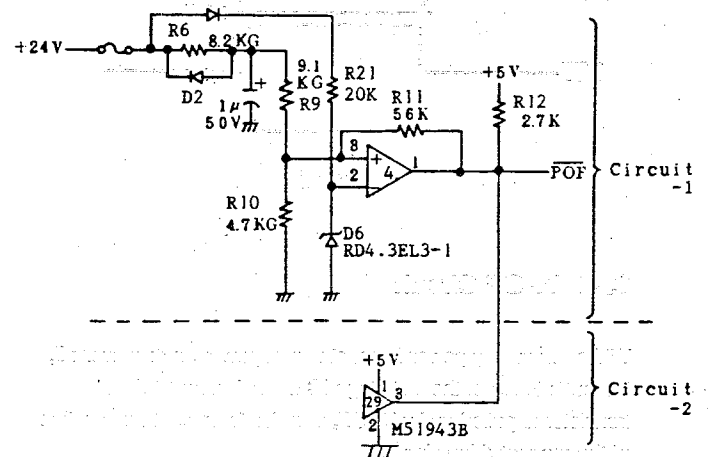


Fig. 13-17

(1) Circuit to detect the state of ac power supply

(circuit-1)

When +24V is at a normal level, 5.2V appears on the $\oplus$ line of the comparator (pin 3, IC4). On the other hand, the $\ominus$ (Pin 2) line is held to +4.3V by the zenor diode D6 so that the comparator output $\overline{\text{POF}}$ is at a high level.

③ At power on

When the comparator $\oplus$ input voltage goes higher than the $\ominus$ input voltage (+4.3V) as the power is turned on, the comparator output $\overline{\text{POF}}$ turns from low to high level.

③ At power off

When the supply power is off or at an extremely low level, the $\oplus$ input voltage goes low before the $\ominus$ input voltage and $\overline{\text{POF}}$ turns from high to low level.

When $\overline{\text{POF}}$ goes low, the CPU executes the power down procedure and stops its operation.

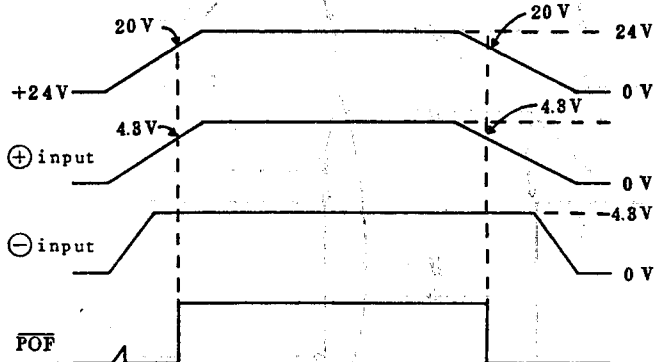


Fig. 13-18

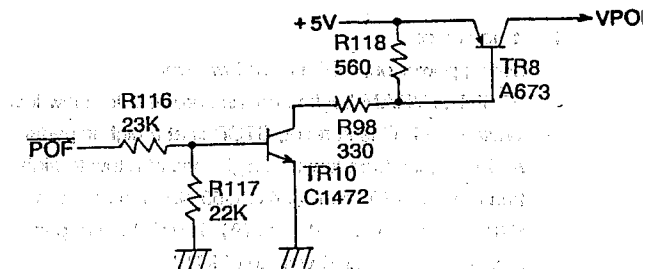


Fig. 13-20

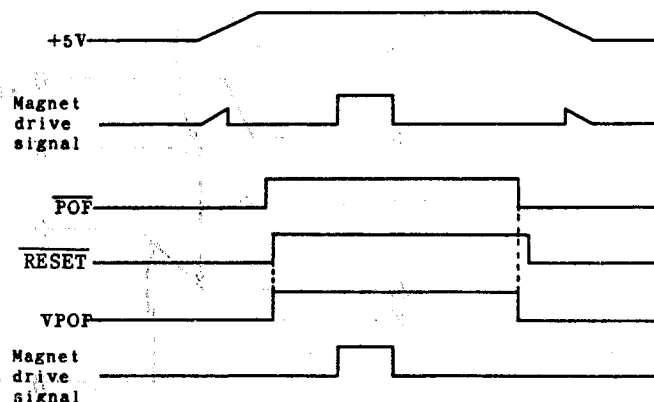


Fig. 13-21

(2) Circuit to detect the state of VCC (+5v) (circuit-2)

When VCC (+5V) goes below 4.5V, then M51943B (IC29) forces the POF line to drop to GND level. In other words, POF is set to a low level immediately after VCC goes below 4.5V.

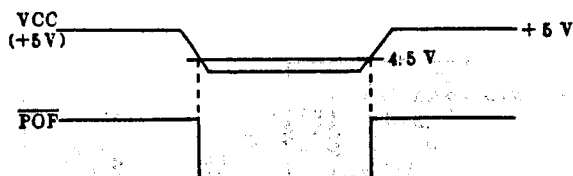


Fig. 13-19

13-6 VPOF Circuit

While the supply power is not stable at power on or power off, the output side of the first stage IC of each magnet drive transistor is pulled up by VPOF, in order to prevent malfunction of the magnet drive circuit.

VPOF is a signal of POF is used to control +5V using the transistor Q9.

The transistor turns on only when POF is high.

13-7 Memory Control Circuit

13-7-1 Address bus

The CPU address bus is directly connected to the address required drive, in order to specify memory (RAM/ROM) and I/O address.

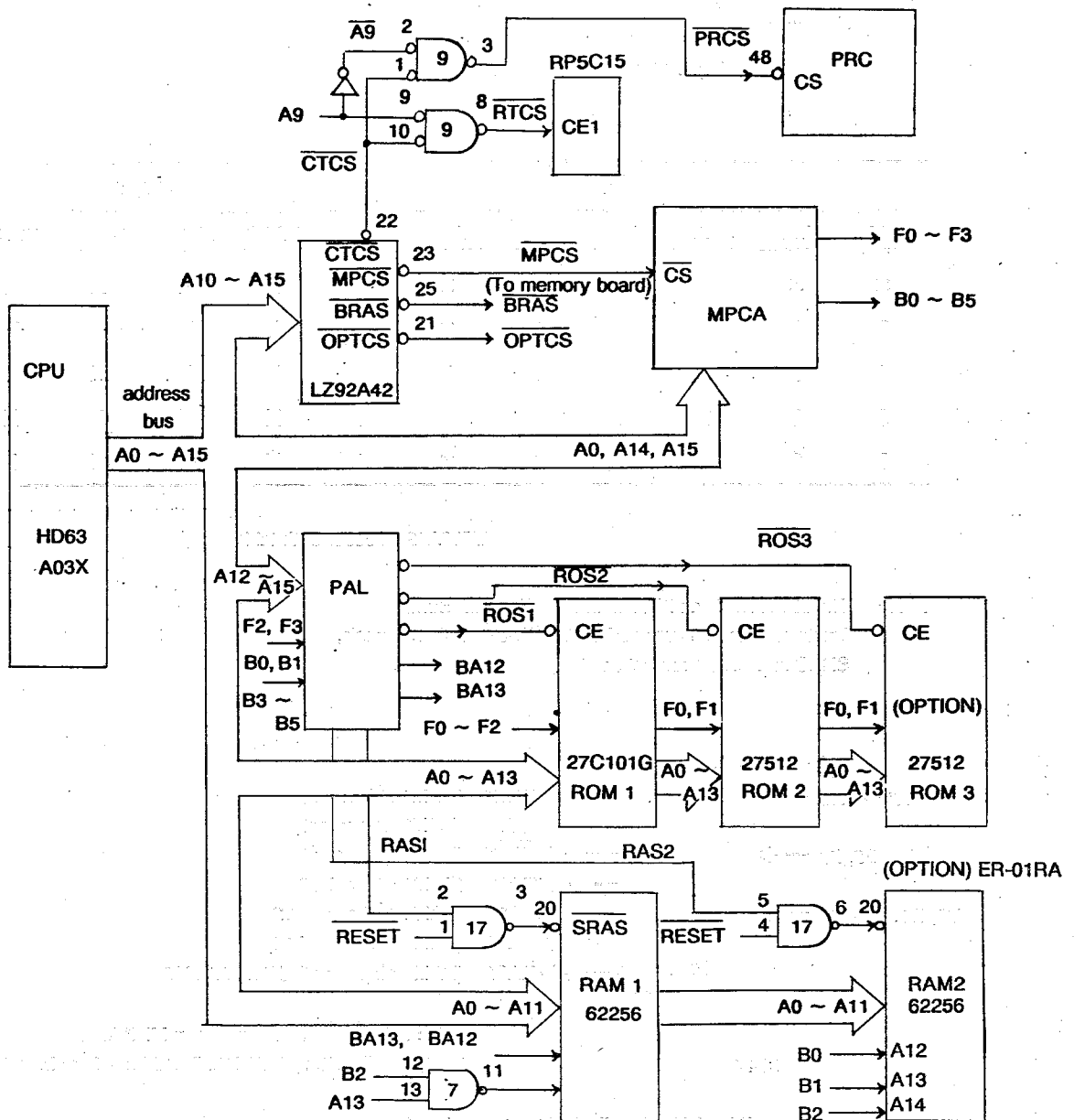


Fig. 13-22

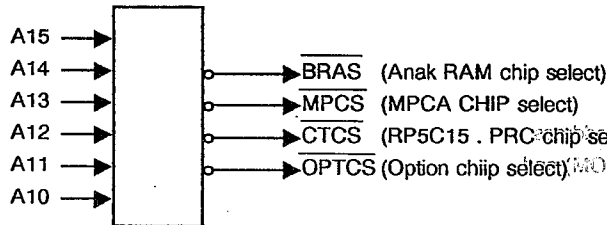
13-7-2 Address decoder

Each chip select signal of the ER-3310/3311 is created by decoding the CPU address (A-15 - A10) using the LZ92A42 internal address decoder and the PAL (16L8).

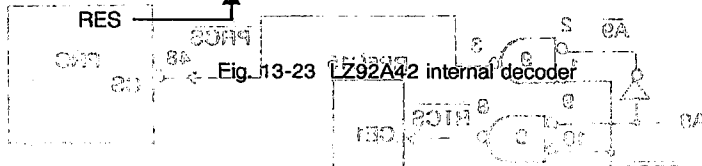
The LZ92A42 produces ER-33MB option memory board bank

RAM select signal ($\overline{\text{BRAS}}$), I/O device chip select signal ($\overline{\text{PRCS}}$, $\overline{\text{RTCS}}$, $\overline{\text{MPCS}}$), and option board select signal ($\overline{\text{OPTCS}}$).

The PAL creates ROM chip select signal ($\overline{ROS1}$ to $\overline{ROS3}$), RAM select signal ($\overline{RAS1}$, $\overline{RAS2}$) and RAM address signal ($\overline{B12}$, $\overline{BA13}$).



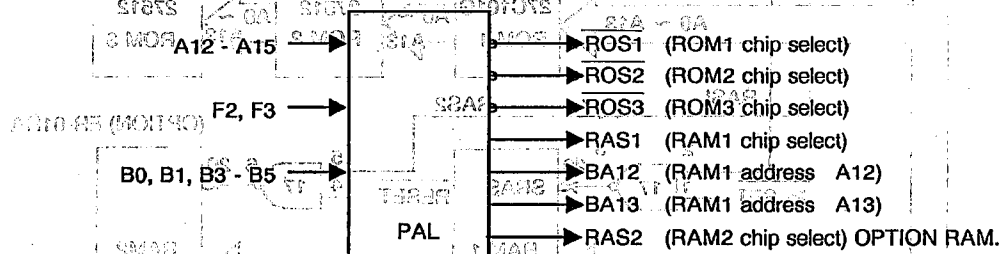
and branch A 1-1-1



Input						Output				
A15	A14	A13	A12	A11	A10	RES	BRAS	MPCH	CTCS	OPTCS
x	x	x	x	x	x	0	H	H	H	H
0	0	1	0	x	x	1	L	H	H	H
0	0	1	1	0	0	1	H	L	H	H
0	0	1	1	0	1	1	H	H	L	H
0	0	1	1	1	x	1	H	H	H	L

LZ92A42 Decoder truth table

NOTE: The LZ92A42 is an IC used in the ER-3100. Some functions of this IC are used by the ER-3310/3311. Signals, SRAS and BROS are not used.



F2, F3 : ROM BANK Address from MPCA.

B0, B1, B3, B4, B5 : RAM BANK Address from MPCA.

PAL (VHI16L8CRAT1A) in ternal decoder.

(refer to section 13-2-5)

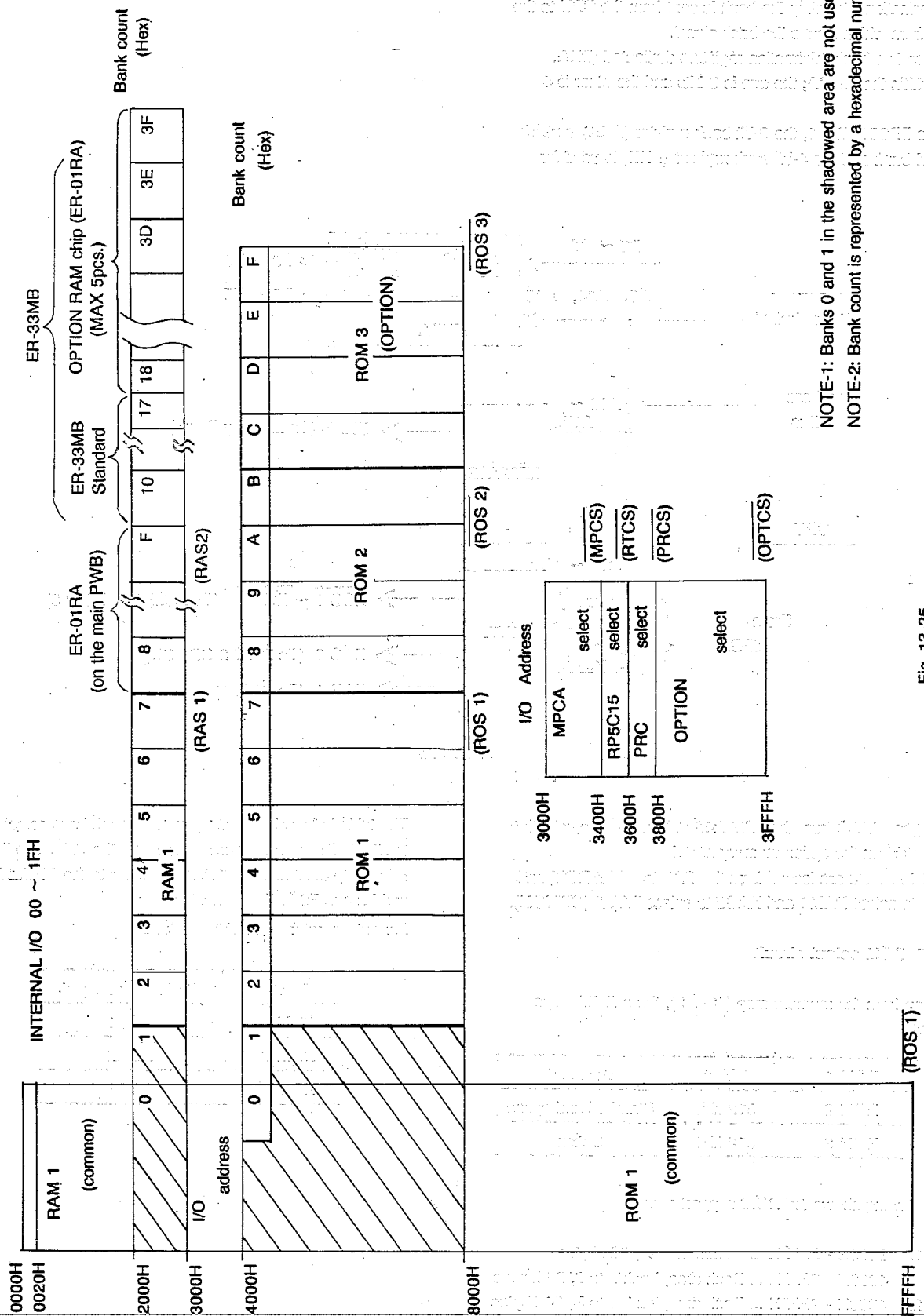


Fig. 13-25

13-7-4 Bank creation circuit

A part of the ER-3310/3311 ROM and RAM is read and written via the bank circuit.

The information regarding the bank is sent from the CPU to the MPCA from which issues the bank signal.

There are two bank information registers dedicated (BRA, BRB) within the MPCA; the one is 6 bits and the other is 4 bits.

With the ER3310/3311, the 6-bit bank register (BRA) is used for RAM bank and the 4-bit bank register (BRB) is used for ROM.

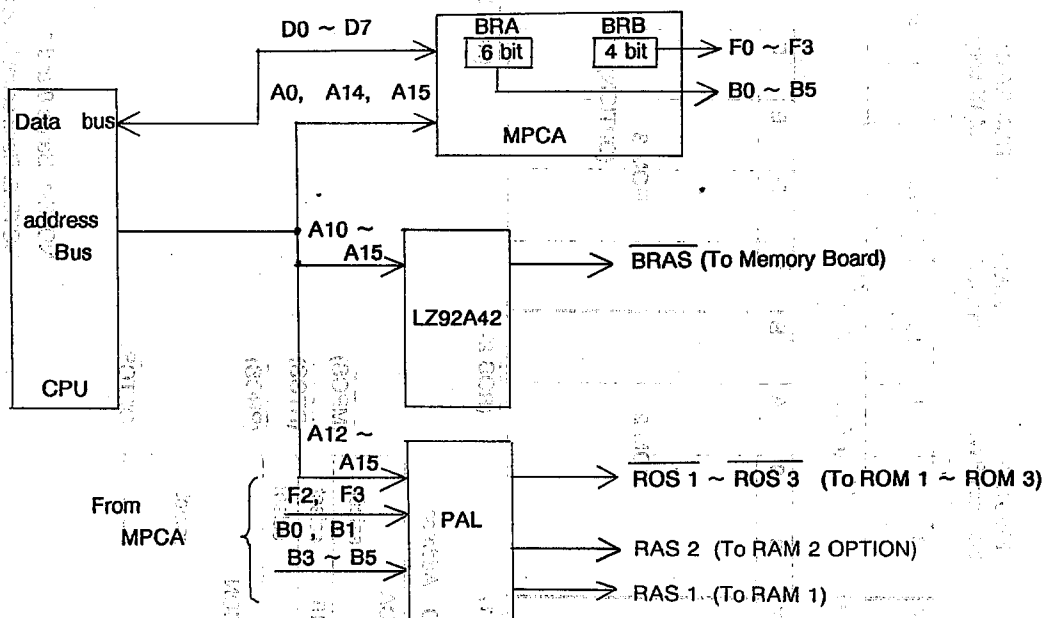


Fig. 13-26

The signal BRAS from the LZ92A42 is issued when selecting bank RAM on the option memory board.

ROS1 to ROS3 are issued from the PAL to select ROM and RAS1 to select RAM1 and RAS2 to select RAM2 (OPTION).

The table below shows assignment of each bank select signal to ROM. These signals are issued from the PAL. The PAL select one of ROM1 to ROM3 according to the CPU address and F2 and F3 ROM bank information.

For details, refer to the PAL truth table.

13-7-5 ROM select circuit

As seen from the memory map (13-7-3), three ROM chips are used.

ROM 1	1 Mbit	Standard
ROM 2	512 kbit	Standard and option
ROM 3	512 kbit	Option

ROM	ROM select signal
ROM 1	ROS1
ROM 2	ROS2
ROM 3	ROS3

The following shows the ROM support area.

ROM1: 8000H - FFFFH ... Common area, 32 kbytes
 4000H - 7FFFH ... Bank area, bank 2 to 7, 96 kbytes
 ROM2: 4000H - 7FFFH ... Bank area, bank 8 to B, 64 kbytes
 ROM3: 4000H - 7FFFH ... Bank area, bank C to F, 64 kbytes

NOTE: Bank 0 and 1 are not used.

The following shows CPU (HD63A03X) address allocation for the ROM chip address of ROM1 thru ROM3.

ROM 1	
ROM chip address	Program allocation area
\$00000	\$C000 \$FFFF Common
\$04000	\$8000 \$BFFF Common
\$08000	\$4000 \$7FFF BANK 2
\$0C000	\$4000 \$7FFF BANK 3
\$10000	\$4000 \$7FFF BANK 4
\$14000	\$4000 \$7FFF BANK 5
\$18000	\$4000 \$7FFF BANK 6
\$1C000	\$4000 \$7FFF BANK 7
\$1FFFF	\$7FFF

Fig. 13-27 (a)

ROM 2	
ROM chip address	Program allocation area
\$0000	\$4000 \$7FFF BANK 8
\$4000	\$4000 \$7FFF BANK 9
\$8000	\$4000 \$7FFF BANK A
\$C000	\$4000 \$7FFF BANK B

Fig. 13-27 (b)

ROM 3	
ROM chip address	Program allocation area
\$0000	\$4000 \$7FFF BANK C
\$4000	\$4000 \$7FFF BANK D
\$8000	\$4000 \$7FFF BANK E
\$C000	\$4000 \$7FFF BANK F

Fig. 13-27 (c)

NOTE: F0 to F3 from the MPCA normally contains the contents of the BRB register, except that the following address is fixed.

input		output			
A15	A14	F3	F2	F1	F0
1	0	0	0	0	1
1	1	0	0	0	0

13-7-6 RAM select circuit

1) RAM1 select

RAM1 is selected by RAS1 which is issued from the PAL. RAM1 has the common area and bank area within the same one chip.

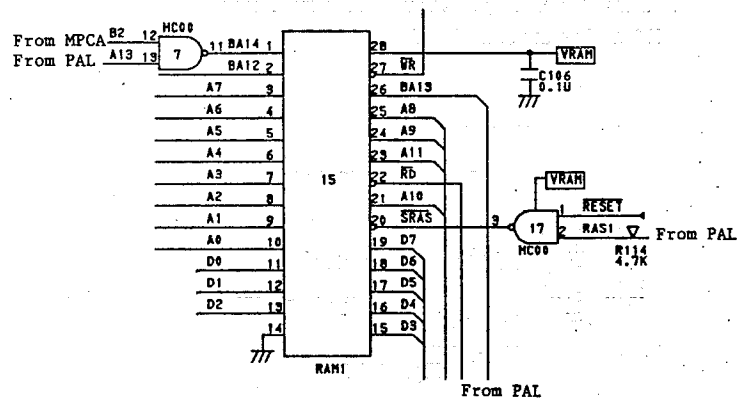


Fig. 13-28

[illegible]

Common
\$1FFF

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

5. *Chlorophyll a* and *Chlorophyll b* contents were determined by spectrophotometry using the method of Lichtenthaler and Whistler (1987).

M2 has the bank 8 to F.

...and the ...



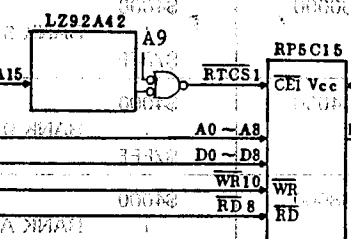
Figure 1

[illegible]

\$0000	\$2000	BANK 8
\$2000	\$2000	

40, 55, 61, 77, 81

5233



01:13:30

13-9 Monitor RAM Circuit

Execution address monitor RAM

A 16K × 1-bit RAM (LH5157) is used to check the CPU executing address. As addressed by the monitor RAM, the total of 14 bits are inputted; A4 thru A13, ROM bank information representing F0 thru F3.

F0 thru F3 are expansion addresses represented by the ROM bank number occurring in MPC (HD61J214F). Hexadecimal "1" is issued as a bank information when 8000H thru BFFFH

is addressed out of the common area which is not the bank ROM, and "0" is issued when C000H thru FFFFH is addressed. Naturally, the bank number is issued when addressing the ROM bank area of 4000H thru 7FFFH. The SPCS signal created by the CPU is connected with the monitor RAM chip select line. SPCS goes active when addressing all banks except for the bank 0 and 1 or the common ROM. So, ROM is addressed along with the monitor RAM, so that the monitor RAM is also selected when a ROM (except bank 0 and 1) is selected.

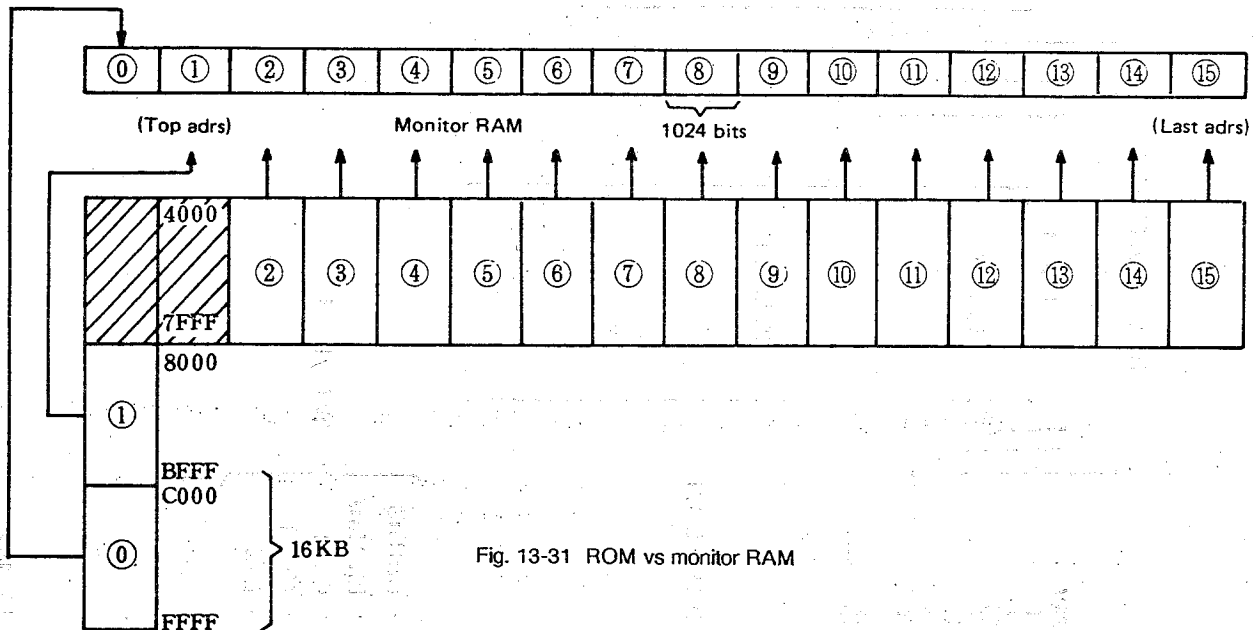


Fig. 13-31 ROM vs monitor RAM

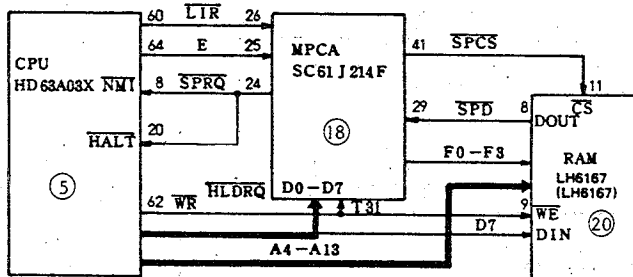


Fig. 13-32

As it does not have the monitor RAM corresponding to the bank 0 and 1, those are out of SSP range.

Mark information can be written in the monitor RAM by simply entering the data 00H in the respective ROM address. (Data contention on the data bus would not occur since the ROM output is disabled by the OE signal, even if data are written in the ROM.)

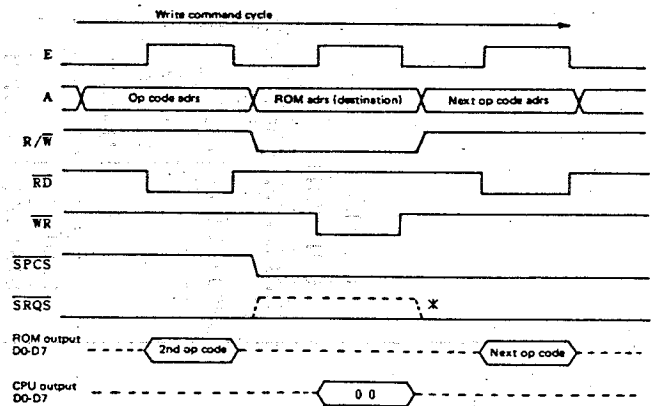
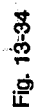


Fig. 13-33

Above timing shows the case when a mark routine exists the common ROM. The STA command of the extend address is used for the write command.

* If the mark address (destination address of the write command) is a bank in ROM, the signal is a high level. As shown in the Fig13-31, a 16KB area of the ROM corresponds to 1K bits of the monitor RAM. This indicates that a continuous 16KB ROM area cannot be discriminated from the monitor RAM. This is for holding the total bit number of the monitor RAM to a minimum. So, an SSP interrupt issued for the command included in the same 16KB block, not the mark address originally. The unwanted SSP interrupt returns without doing anything during an SSP interrupt as the address specified by the mark address differs from the return address.

Abstract

[illegible]

Pin No.	Symbol	Signal name	In/Out	Function
1	RO1	SB	Out	Display segment signal "b"
2	RO2	SC	Out	Display segment signal "c"
3	RO3	SD	Out	Display segment signal "d"
4	R10	SE	Out	Display segment signal "e"
5	R11	SF	Out	Display segment signal "f"
6	R12	SG	Out	Display segment signal "g"
7	R13	ECT	Out	Display tube common signal
8	R20	DOT▼	Out	Display segment signal
9	R21	—	Out	NOT USED
10	R22	SEG▼	Out	Display segment signal
11	R23	SEGBP	Out	Display segment signal
12	RA0	CFSR	In	Cashier switch return signal
13	RA1	MODR	In	mode switch return signal
14	R30	KR0	In	Key return signal
15	1	1		
17	R33	KR3		
18	R50	SKR	—	GND (not used)
19	R51	ENCG	Out	Dot matrix segment decoder (LI-2047) CE signal
20	R52	KEX	Out	Key expand signal
21	R53	ENST	Out	Dot matrix digit signal decoder (IR-2C12) CE signal
22	R60	ST0	Out	Key scan timing signal
23	1	1		
25	R63	ST3		
26		VCC	—	+ 5V supply
27	SCK	SCK		Serial data shift clock input
28	SI	HTS	In	Serial data input
29	S0	STH	Out	Serial data output
30	R43	NU	—	Not used
31	R70	CGA0	Out	Dot matrix address signal
32	1	1		
37	R82	CGA6		
38	R36	—	Out	NOT USED
39	R90	KR4	In	Key return signal
40	1	1		
42	R93	KR7		
43	RESET	KDCR	In	Reset input signal
44	TEST	TEST	In	+ 5V (not used)
45	OSC1	OSC1	In	Clock input (crystal oscillator connected)
46	OSC2	OSC2	In	Clock input (crystal oscillator connected)
47	GND	GND	—	+ 0V supply
48	D0	KRQ	Out	Interrupt request
49	D1	SHEN	Out	Interrupt output
50	D2	—	Out	NOT USED
51	D3	BZ	Out	Buzzer signal, high tone
52	D4	GS1	Out	Display tube digital signal
53	1	1		
62	D14	GS11		
63	d15	—	—	NOT USED
64	R00	SA	Out	Display tube segment signal "a"

13-10-3 General

Data from the CPU, is sent to the MPCA where it is converted into a serial signal. Then, it is sent to the keyboard/display/buzzer controller (KDC).

The KDC controls keys, cashier switch, mode switch, buzzer, numeric, alphanumeric display tube, and customer display.

Information, from the key and switch are returned to the MPCA in the form of serial data.

13-10-5 Display control

The numeric and alphanumeric display tube (112LT02G) is used for display, each one controlled with different signals.

- Display signals (CG1-CG11), segment signals (SA - SG), SEG ∇ , DP, and dot ∇ signals are sent from KDC to the numeric display, and they are driven directly by the KDC. The 112LT02G signals on the operator display are supplied parallel to the customer display.

13-10-4 Data transfer between the MPCA and KDC

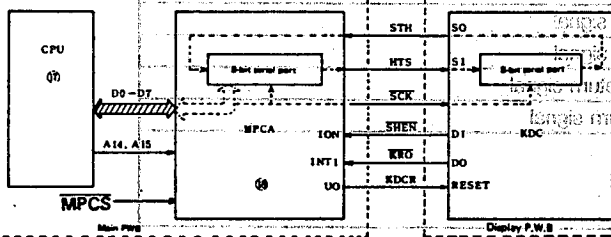


Fig. 13-35

- STH : Serial-data output (from KDC to MPCA)
- HTS : Serial-data input (from MPCA to KDC)
- SCK : Shift clock
- SHEN : Shift enable, active low
- KRQ : Interrupt-request
- KDCR : KDC reset-signal

- 8-bit data transfer between MPCA and KDC is carried out via the 8-bit serial port.
- Data and commands are not shifted by the HTS and STH lines, but carried out by an MPCA command. No shift is done by KDC itself.
- After processing data or commands received on the 8-bit serial port, the KDC informs the MPCA by the state of SHEN that it is ready for next shift of the serial port.
- When the 8-bit data has been shifted into the KDC from the MPCA with eight SCK, the control goes into the next processing step after setting SHEN high.
- As the MPCA senses a high to low transition of SHEN, transfer of the 8-bit data is acknowledged.
- 8-bit data transfer between KDC and MPCA. After transferring the final byte from MPCA to KDC, "00H" is issued as a dummy code. To insure proper data transfer from KDC to MPCA, the same data is sent twice.
- When there is a transition in the keyboard, clerk switch, receipt switch and mode switch, the KDC sets KRQ low and the 8-bit data is sent to the MPCA on STH.

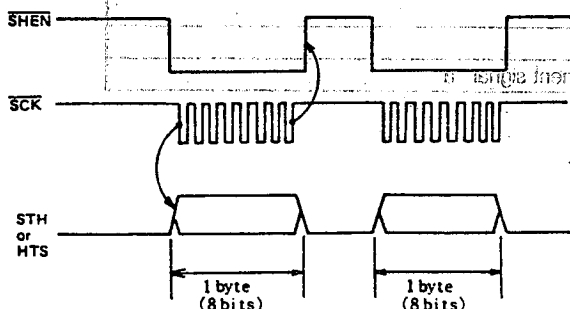


Fig. 13-36

IMPORTANT:

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

Dot matrix tube

A 4-bit binary output signals (ST0 - ST3) from KDC are converted into the digit five signal (DG0 - DG15) in the IR2C12.

Inputs on CGA0 - 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 - D75.

13-10-6 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 (CE1 and CE2) 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 CE1 is at a high level, no dot output are generated.

0000	0000	00
0001	0001	01
0010	0010	02
0011	0011	03
0100	0100	04
0101	0101	05
0110	0110	06
0111	0111	07
1000	1000	08
1001	1001	09
1010	1010	0A
1011	1011	0B
1100	1100	0C
1101	1101	0D
1110	1110	0E
1111	1111	0F
1200	1200	10
1201	1201	11
1210	1210	12
1211	1211	13
1300	1300	14
1301	1301	15
1310	1310	16
1311	1311	17
1400	1400	18
1401	1401	19
1410	1410	1A
1411	1411	1B
1500	1500	1C
1501	1501	1D
1510	1510	1E
1511	1511	1F
1600	1600	20
1601	1601	21
1610	1610	22
1611	1611	23
1700	1700	24
1701	1701	25
1710	1710	26
1711	1711	27
1800	1800	28
1801	1801	29
1810	1810	2A
1811	1811	2B
1900	1900	2C
1901	1901	2D
1910	1910	2E
1911	1911	2F
2000	2000	30
2001	2001	31
2010	2010	32
2011	2011	33
2100	2100	34
2101	2101	35
2110	2110	36
2111	2111	37
2200	2200	38
2201	2201	39
2210	2210	3A
2211	2211	3B
2300	2300	3C
2301	2301	3D
2310	2310	3E
2311	2311	3F
2400	2400	40
2401	2401	41
2410	2410	42
2411	2411	43
2500	2500	44
2501	2501	45
2510	2510	46
2511	2511	47
2600	2600	48
2601	2601	49
2610	2610	4A
2611	2611	4B
2700	2700	4C
2701	2701	4D
2710	2710	4E
2711	2711	4F
2800	2800	50
2801	2801	51
2810	2810	52
2811	2811	53
2900	2900	54
2901	2901	55
2910	2910	56
2911	2911	57
3000	3000	58
3001	3001	59
3010	3010	5A
3011	3011	5B
3100	3100	5C
3101	3101	5D
3110	3110	5E
3111	3111	5F
3200	3200	60
3201	3201	61
3210	3210	62
3211	3211	63
3300	3300	64
3301	3301	65
3310	3310	66
3311	3311	67
3400	3400	68
3401	3401	69
3410	3410	6A
3411	3411	6B
3500	3500	6C
3501	3501	6D
3510	3510	6E
3511	3511	6F
3600	3600	70
3601	3601	71
3610	3610	72
3611	3611	73
3700	3700	74
3701	3701	75
3710	3710	76
3711	3711	77
3800	3800	78
3801	3801	79
3810	3810	7A
3811	3811	7B
3900	3900	7C
3901	3901	7D
3910	3910	7E
3911	3911	7F
4000	4000	80
4001	4001	81
4010	4010	82
4011	4011	83
4100	4100	84
4101	4101	85
4110	4110	86
4111	4111	87
4200	4200	88
4201	4201	89
4210	4210	8A
4211	4211	8B
4300	4300	8C
4301	4301	8D
4310	4310	8E
4311	4311	8F
4400	4400	90
4401	4401	91
4410	4410	92
4411	4411	93
4500	4500	94
4501	4501	95
4510	4510	96
4511	4511	97
4600	4600	98
4601	4601	99
4610	4610	9A
4611	4611	9B
4700	4700	9C
4701	4701	9D
4710	4710	9E
4711	4711	9F
4800	4800	A0
4801	4801	A1
4810	4810	A2
4811	4811	A3
4900	4900	A4
4901	4901	A5
4910	4910	A6
4911	4911	A7
5000	5000	A8
5001	5001	A9
5010	5010	AA
5011	5011	AB
5100	5100	AC
5101	5101	AD
5110	5110	AE
5111	5111	AF
5200	5200	B0
5201	5201	B1
5210	5210	B2
5211	5211	B3
5300	5300	B4
5301	5301	B5
5310	5310	B6
5311	5311	B7
5400	5400	B8
5401	5401	B9
5410	5410	BA
5411	5411	BB
5500	5500	BC
5501	5501	BD
5510	5510	BE
5511	5511	BF
5600	5600	C0
5601	5601	C1
5610	5610	C2
5611	5611	C3
5700	5700	C4
5701	5701	C5
5710	5710	C6
5711	5711	C7
5800	5800	C8
5801	5801	C9
5810	5810	CA
5811	5811	CB
5900	5900	CC
5901	5901	CD
5910	5910	CE
5911	5911	CF
6000	6000	D0
6001	6001	D1
6010	6010	D2
6011	6011	D3
6100	6100	D4
6101	6101	D5
6110	6110	D6
6111	6111	D7
6200	6200	D8
6201	6201	D9
6210	6210	DA
6211	6211	DB
6300	6300	DC
6301	6301	DD
6310	6310	DE
6311	6311	DF
6400	6400	E0
6401	6401	E1
6410	6410	E2
6411	6411	E3
6500	6500	E4
6501	6501	E5
6510	6510	E6
6511	6511	E7
6600	6600	E8
6601	6601	E9
6610	6610	EA
6611	6611	EB
6700	6700	EC
6701	6701	ED
6710	6710	EE
6711	6711	EF
6800	6800	F0
6801	6801	F1
6810	6810	F2
6811	6811	F3
6900	6900	F4
6901	6901	F5
6910	6910	F6
6911	6911	F7
7000	7000	F8
7001	7001	F9
7010	7010	FA
7011	7011	FB
7100	7100	FC
7101	7101	FD
7110	7110	FE
7111	7111	FF

- c) Voltage level
 Input (CGA0 - CGA6)
 High : +5V
 Low : GND
 Output (D11 - D75)
 High : +5V
 Low : -31V

S2-S5

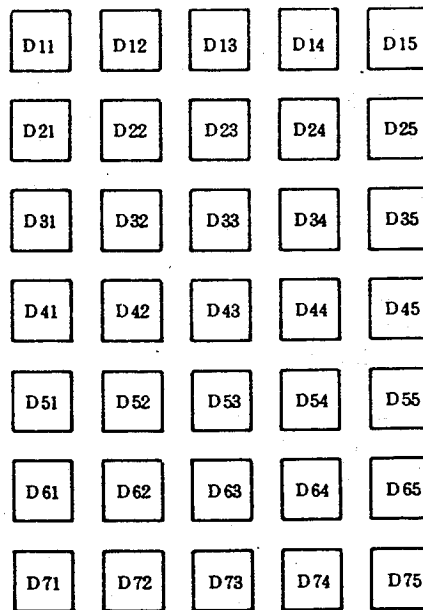


Fig. 13-37

13-10-7 Key switch control

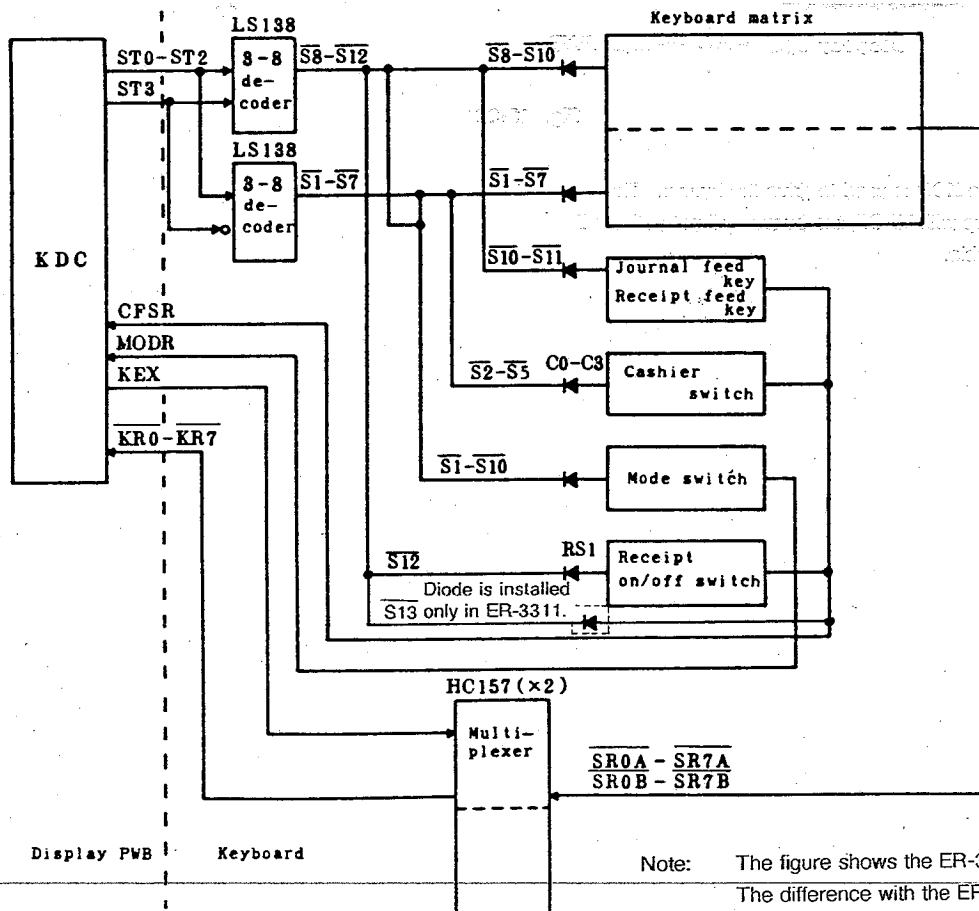


Fig. 13-38

Key strobe signals, ST0 - ST3, sent from the KDC are converted into S0 - S12 via the two chips of 3-8 decoders within the keyboard.

S0 - S12 are sent as active low signals and sent to the keyboard matrix, cashier switch, receipt switch, JF / RF switch and mode switch.

Since the matrix is divided into two on the keyboard (78 keys, 80 keys), there are two groups of return signals, SR0A - SR7A and SR0B - SR7B. These signals are selected using the multiplexer of the HC157.

The HEX signal issued from the KDC is used to control the multiplexer.

The CFSR signal is used for the journal feed key return, receipt feed key return, cashier key return, and receipt switch return and the MODR signal is used for the mode switch return signal.

When the KDC detects a key return signal or switch return signal, the interrupt request (KRQ) is set low to the MPCA. After converting the key and switch data into serial data, the key and switch status is sent to the MPCA.

13-10-8 Buzzer circuit

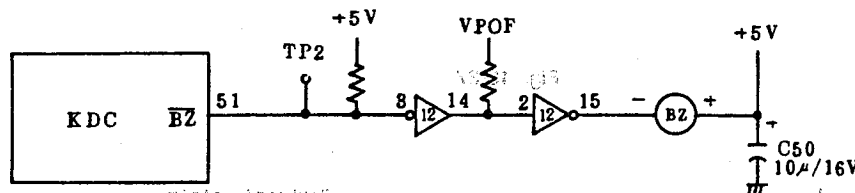
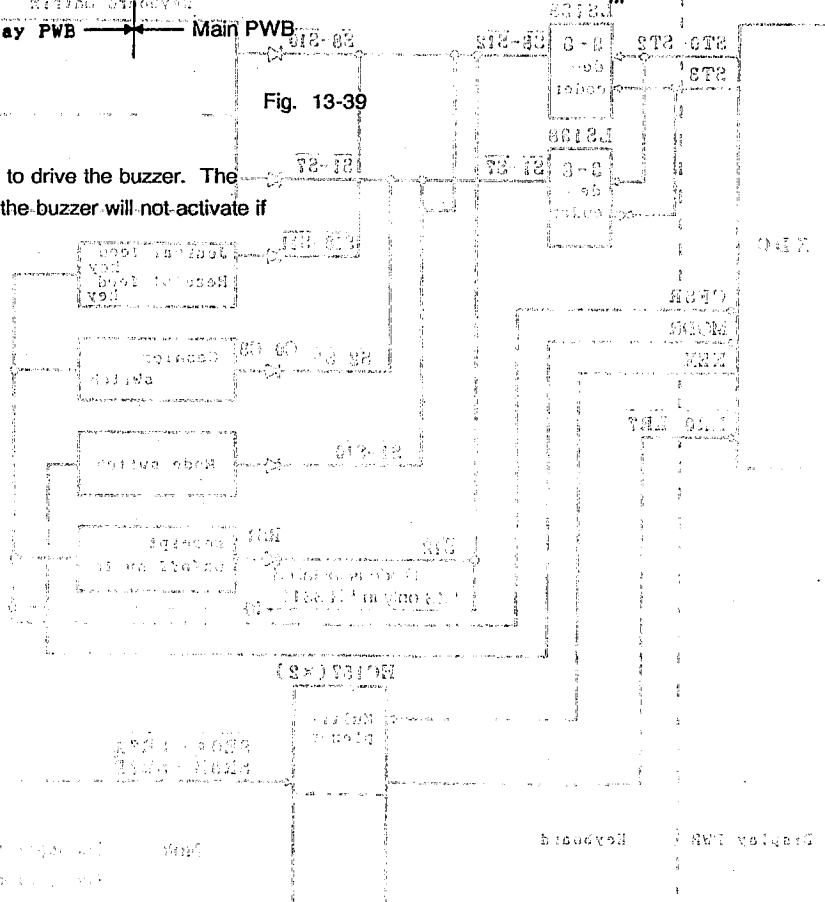


Fig. 13-39

The signal $\overline{BZ}$ of the KDC is used to drive the buzzer. The drive line is pulled up with VPOF, the buzzer will not activate if the power is not stable.



13-11 Printer Control

13-11-1 Block diagram

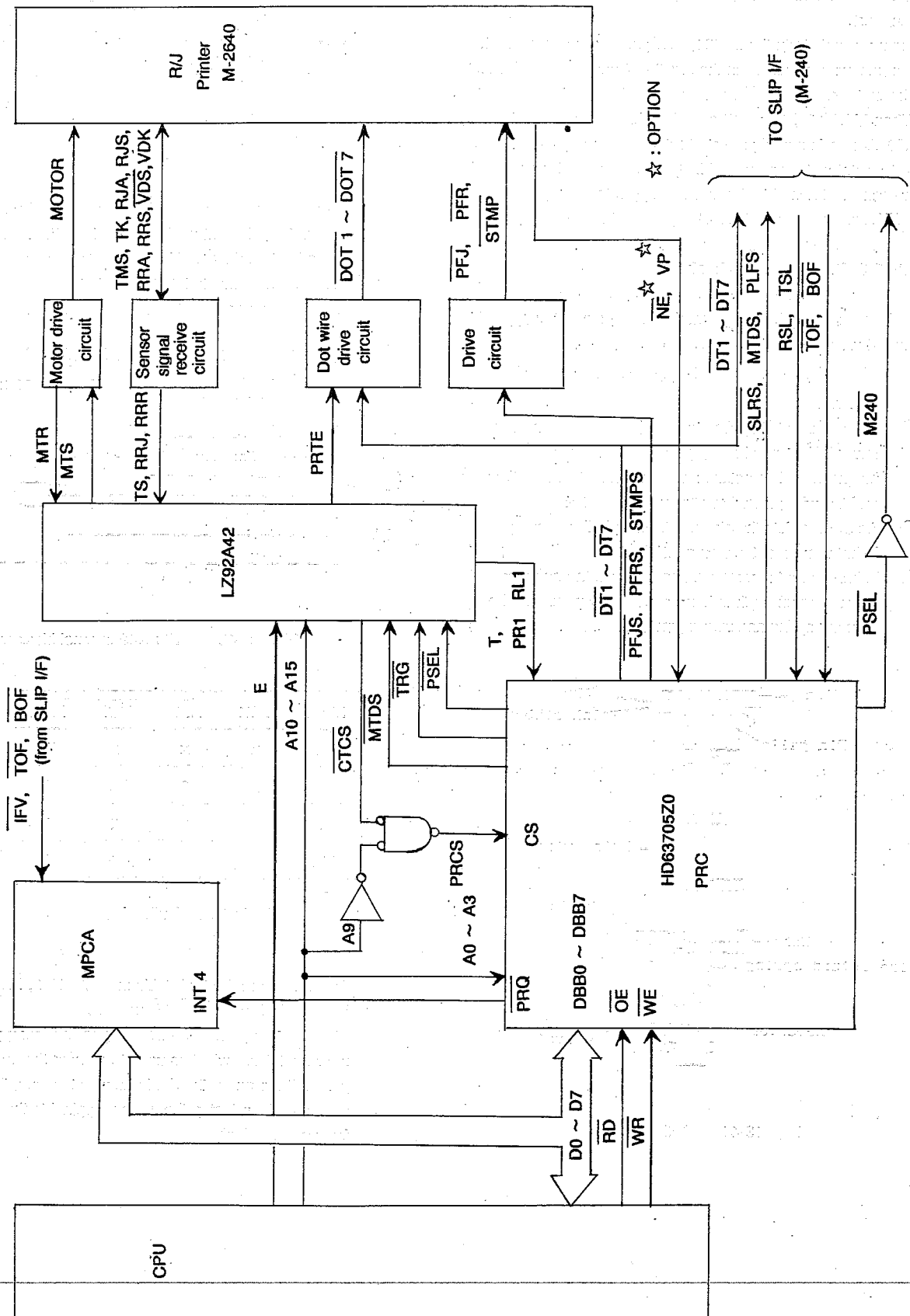


Fig. 13-40

13-11-2 Printer control description

The PRC (HD63705Z0) is used to control the printer. Data transfer between the CPU and the PRC is carried out in the parallel communication mode (handshake) via the PRC internal dual port.

Timing signals from the M-2640 R/J printer are shaped in the control timing circuit within the LZ92A42 and sent to the PRC. The motor drive timing circuit is provided within the LZ92A42. When MTDS (PRC, pin 9) goes low, MTD (pin 11) of the LZ92A42 is forced high to start rotating the motor. As the motor rotates, timing pulse (TMS) are generated by means of the sensor attached to the motor. The printer is controlled with a TTL level signal which TMS converted to.

13-11-3 Print head mechanism

With the timing pulse (TS) from the motor, current is applied to the dot wire drive coil to print.

- Discussion is given here to explain how a single dot wire is driven.
- ① When current is applied to a coil, the actuator moves towards the arrowhead (a) as the steel core is magnetized. The actuator makes connection with the wire, and the wire pushed out towards the platen.
- ② As the wire hits the platen with the ink ribbon and paper in-between, a dot is then printed.
- ③ When current is removed from the coil, the actuator and the wire return to their home position by means of the actuator spring and wire return spring.

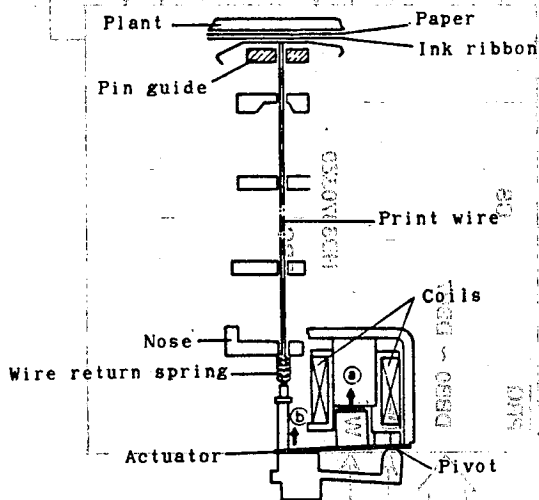


Fig. 13-41 Action of dot wire

13-11-4 Dot wire drive control circuit

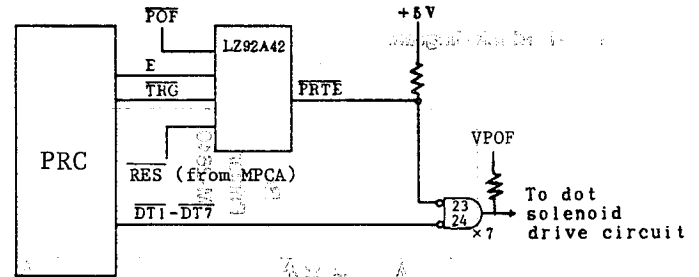


Fig. 13-42

Dot wire drive signals ($\overline{DT1-DT7}$) sent from the PRC pins 66-60 and $\overline{PRTE}$ print enable signal from the LZ92A42 are sent to IC23 and IC24. The solenoid will not activate unless $\overline{PRTE}$ is sent active to IC23 and IC24.

The $\overline{PRTE}$ is created within the LZ92A42.

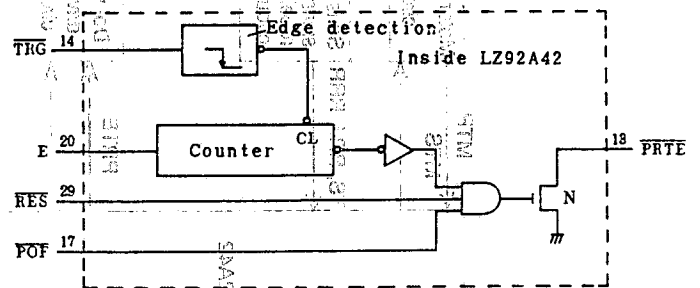


Fig. 13-43 LZ92A42 internal block diagram

Motor	TRG	RES	POF	PRTE
OFF	x	x	x	H
x	x	0	x	H
x	x	x	0	H
ON	↓	1	1	L

← One-shot action

Table 13-2 Truth table

As shown from the truth table in Table 13-2, $\overline{PRTE}$ will not be issued when $\overline{RES}$, $\overline{POF}$ are active. The counter operated by the E signal is a retriggerable digital monomulti-timer which is used to monitor the head drive period. If current to the dot head was too long, the timer is started and it will stop the current applied to the dot head by forcing $\overline{PRTE}$ high.

When $\overline{\text{MTDS}}$ (motor drive signal) is issued from the PRC, MTD and MTS signals are created within the LZ92A42 and the drive transistor TRA goes active. MTD is a motor drive signal and MTS is a motor stop signal, and these two signal will never go high at the same time.

When MTD is high and MTS is low, TRB turns off and TRA turns on to apply ION to the motor.

When MTD is low and MTS is high, TRB turns on and TRA turns off to absorb counter-electromotive force of the motor.

IOFF comes applied to stop the motor.

- Motor lock detect circuit

If the motor halts prematurely during its expected rotation, ION increases. To detect it, the comparator of IC25 is used. When the LZ92A42 detects MTR (motor lock signal), MTD is immediately set low to stop the motor. This condition can be cleared using RESET from the reset circuit.

- LZ92A42 internal circuit

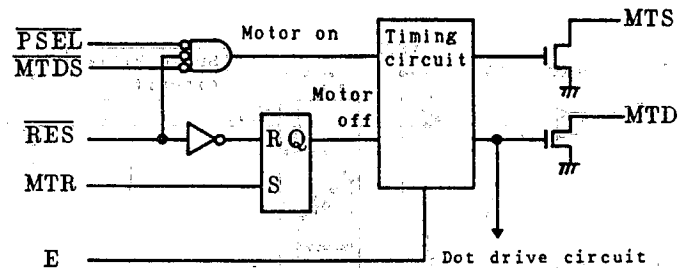


Fig. 13-48

PSEL	MTDS	RES	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

Table 13-3 Truth table

13-11-8 Sensor signal receive circuit

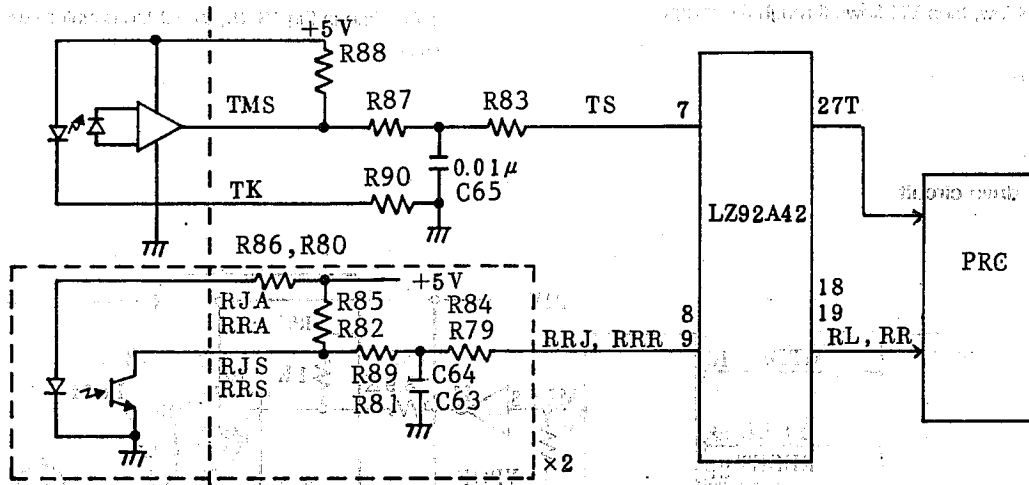


Fig. 13-49

The signal from the photocoupler in the printer is converted into TTL level and conveyed to the PRC via the schmitt trigger buffer within the LZ92A42.

Fig.13-50 shows the internal circuit of the LZ92A42.

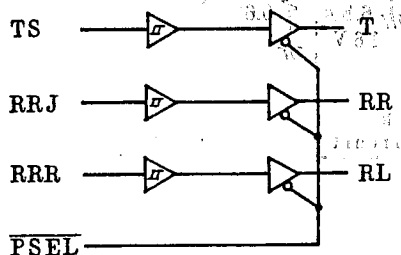


Fig. 13-50

PSEL	T	RR	RL
0	TS	RRR	RRJ
1	Z	Z	Z

Z : high impedance

Table 13-4 Truth table

Paper feed and stamp circuit

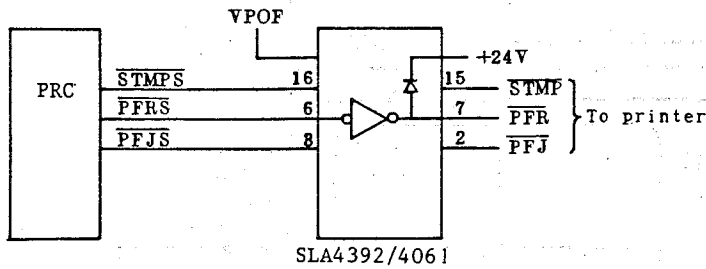


Fig. 13-51

STMP, PFRS, and PFJS sent from the PRC are used, once applied and converted (SLA4392/4061), to activate the coils on the printer side.

The diode within the SLA4392/4061 is used to absorb the counter-electromotive force.

Since these signals are pulled up by VPOF, action will not occur when supply power is not stable.

13-12 SIO (serial interface) Circuit

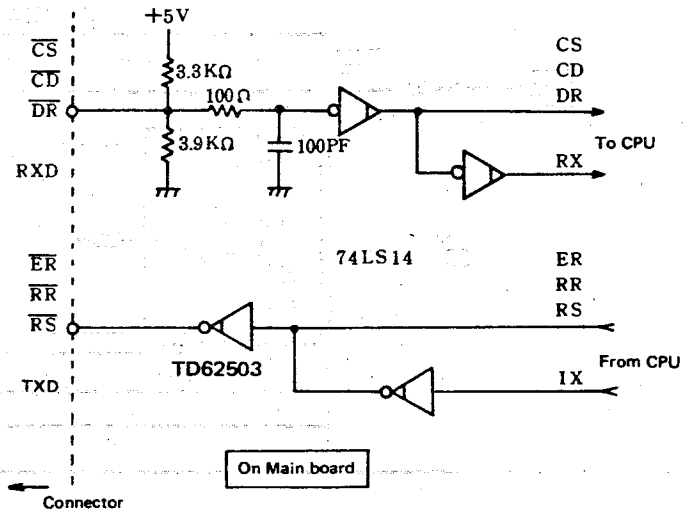


Fig. 13-52

The I/O circuit is a buffer that uses the 74LS14, and the voltage level at the connector is TTL level.

13-13 Power Supply Circuit

13-13-1 Block diagram

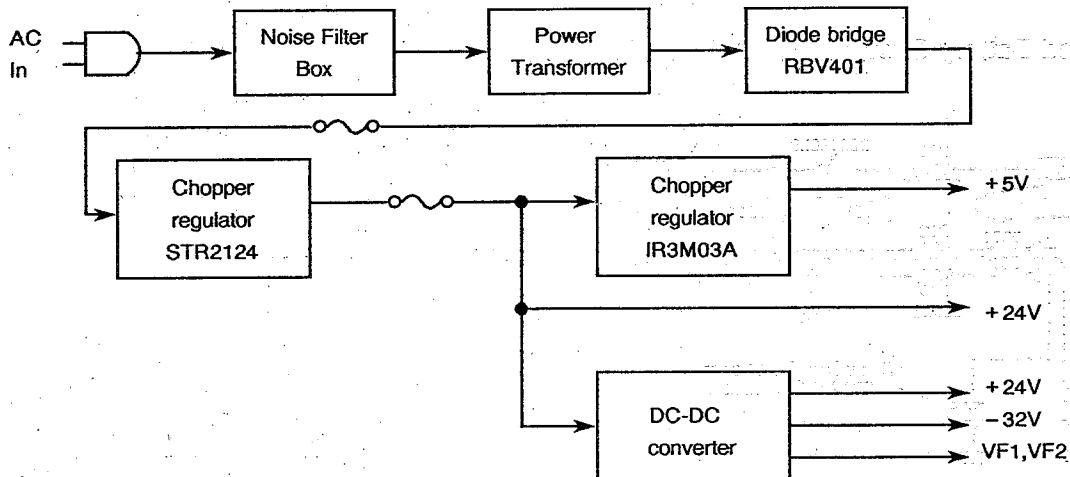


Fig. 13-53

- +24V : Printer, drawer drive
- +5V : Logic drive power supply
- +12V : Ni-cd battery recharge, SRN line driver bias
- 32V : Fluorescent tube filament

For the DC-DC converter, refer to Section 8 of Cash Register Basic Manual.

13-13-2 Switching regulator circuit (+24V)

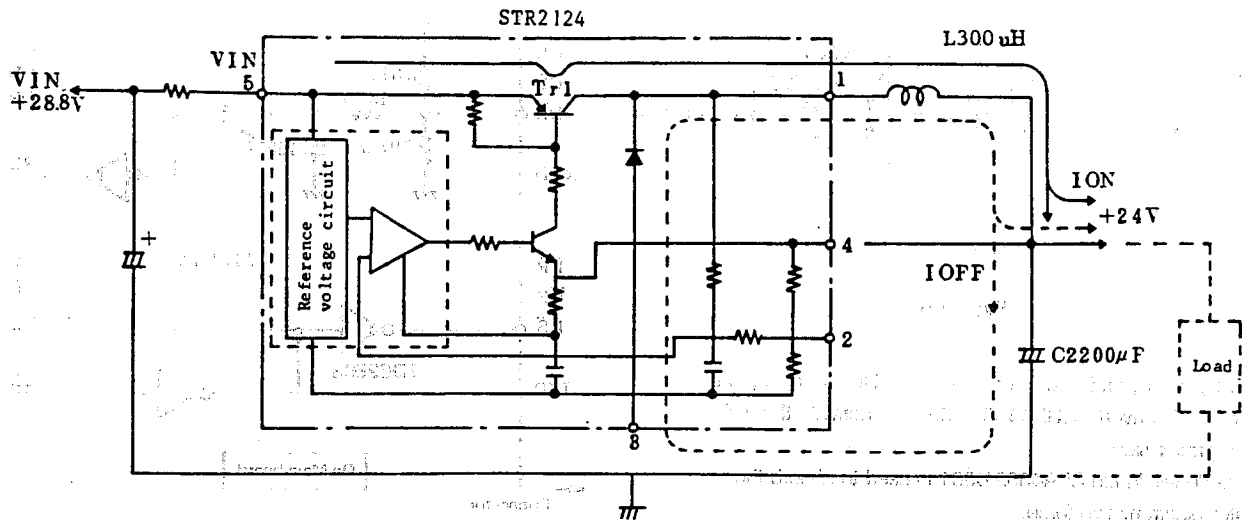


Fig. 13-54

By switching V_{IN} (+28.8V) by the transistor TR1 within the STR2024, +24VDC supply is obtained through the LC network.

Stable +24V is obtained by controlling on/off duty of TR1.

I_{ON} : Current when TR1 is on.

I_{OFF} : Current when TR1 is off.

13-14 Ni-cd Battery Circuit

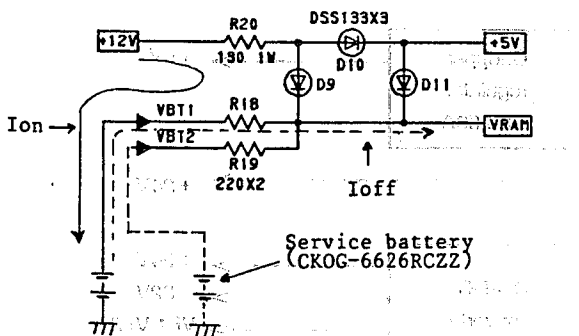


Fig. 13-55

When power is on, the battery is recharged by I_{ON} . When power is off, power is supplied to the VRAM with I_{OFF} .

13-15 Drawer Control Circuit

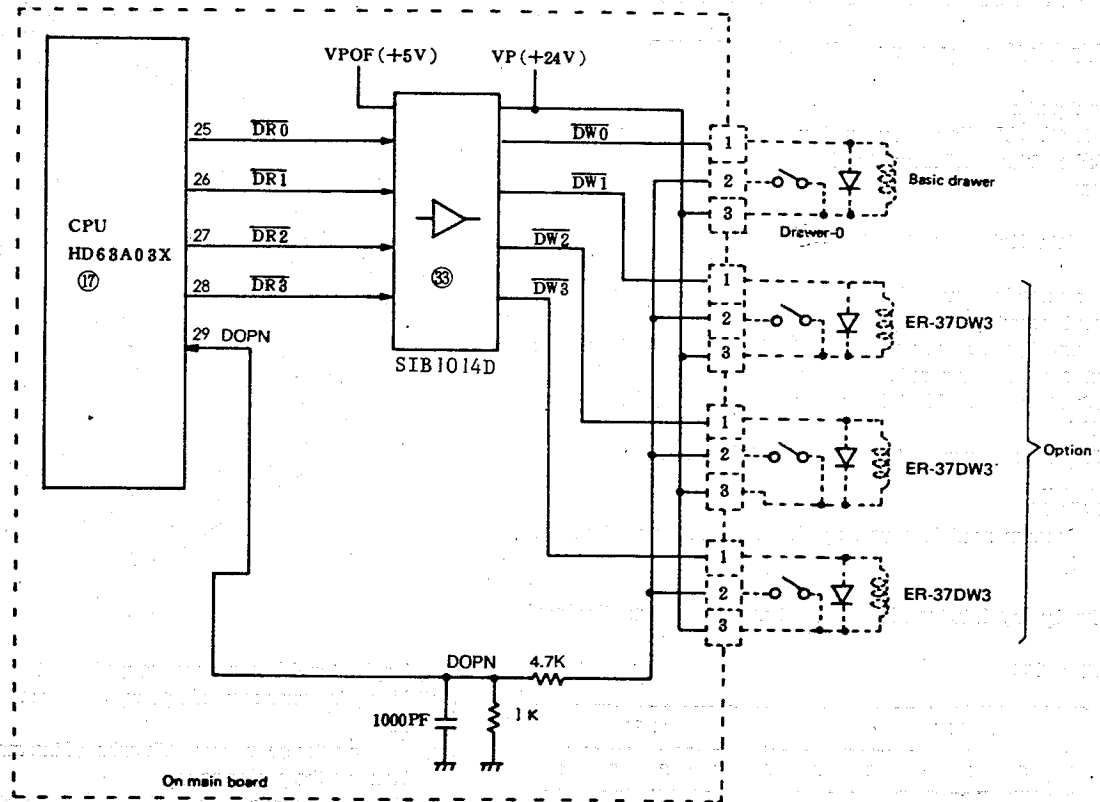


Fig. 13-56

The drawer open signal ($\overline{DR0}$ to $\overline{DR3}$) is issued from the CPU and sent to the driver IC (SIB1014D) to drive the drawer magnet. The drawer switch closes when the drawer is closed which causes the drawer sensor signal to go high. After it is converted into a TTL level in the CR network, DOPN is then applied to the CPU as the drawer open signal DOPN.

- Drawers, 1 thru 3, are optional (ER-34DW3).
- Diode attached to the drawer is a spark killer.
- VPOF (+5V) is issued to prohibit the drawer magnet drive signal when operation is unstable at power on/off.

14. SERVICE OPTION INSTALLATION PROCEDURE

14-1. Validation sensor (DKIT-8227RCZZ)

Component parts:

DUNTK8224RCZZ: Sensor unit, with connector and screws

VRD-RC2EY163J: 16kΩ resistor (R73)

Installation:

1) Saving data (Refer to section 11.)

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 ER3310/3311 to be installed with the option must be saved in the data saving unit consisting of the ER3310/3311 and ER01FD/02FD, using the cable (QCNW-6952RCZZ).

1-1) Getting the receiving ER3310/3311/ER01/02FD ready for operation

ER3310/3311

Clear the memory of the receiving ER3310/3311 by master reset (MRS-1).

ER01FD

Set the dip switch to the ER3310/3311 mode. Also, set the baud rate.

EX. 9600 BPS

DS1								DS2			
1	2	3	4	5	6	7	8	1	2	3	4
OFF	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	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 ER3310/3311 and connect the other end to the ER3310/3311 to be installed with the option unit.

1-3) Setting the receiving ER-3310/3311 in the data receive mode

Set the mode switch of the receiving ER3310/3311 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 ER01/02FD as it incorporates the automatic start feature.

1-4) Setting the transmitting ER3310/3311 in the data transmit mode

Set the mode switch of the transmitting ER3310/3311 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. 14-1)

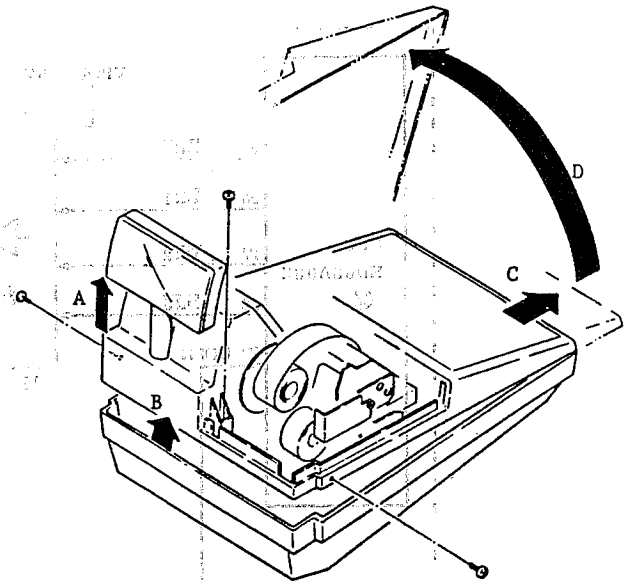


Fig.14-1

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 (Fig. 14-2)

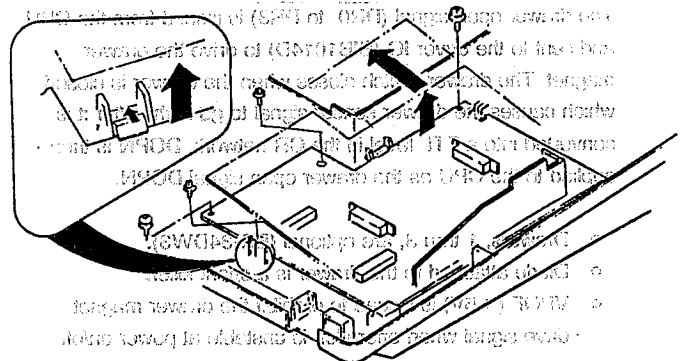


Fig. 14-2

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 R73 16kΩ (VRD-RC2EY163J) on the main PWB, in reference to Fig. 14-3:

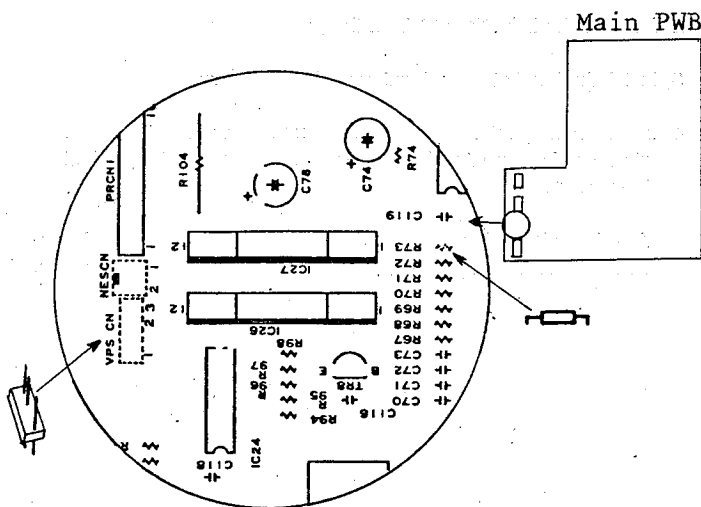


Fig. 14-3

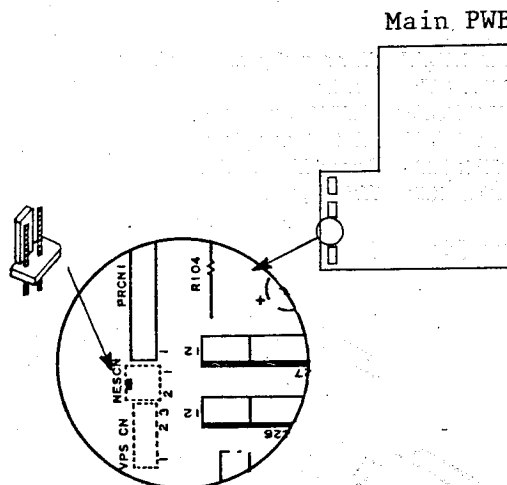


Fig. 14-4

5) Installing the sensor unit (Fig. 14-5)

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

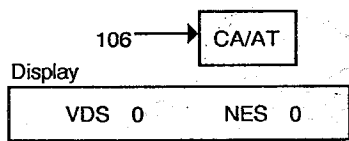
Replace connector and other parts in the reverse sequence.

7) Restoring the data

Load the data from the ER3310/3311 in which the data was saved.

8) Operation check

Executes the Job #106 of the test function.



When validation paper loaded = C
When validation paper unloaded = 0

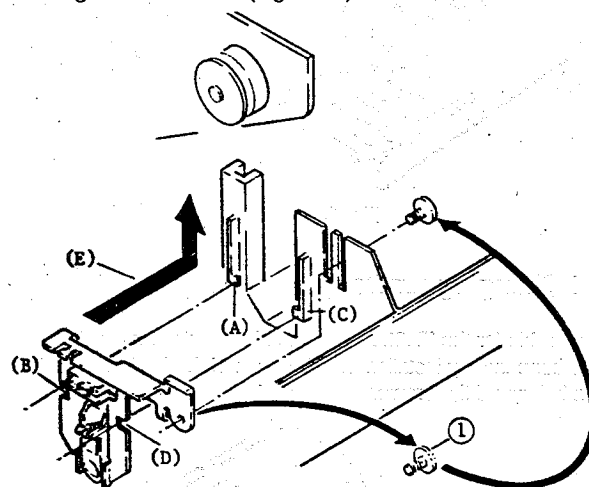


Fig. 14-5

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.

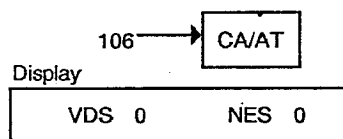
7) Replace the main PWB and the cabinet.

8) Restoring the data

Load the data saved from the ER3310/3311 in which the data was saved.

9) Operation check

Executes the Job #106 of the test function.



When paper loaded = C
When paper unloaded = 0

Adjustment:

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

14-2. Near end sensor (DKIT-8226RCZZ)

Component parts:

DUNKTK8296RCZZ: 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 ER3310/3311 to be installed with the option must be saved in the data saving unit consisting of the ER3310/3311 and ER01/02FD, using the cable (QCNW-6952RCZZ).

2) Removing the cabinet

Remove the cabinet in reference to 14-1).

3) Removing the main PWB

Remove the main PWB in reference to 14-1).

4) Installing parts on main PWB

Install and solder the 2-pin connector on the main PWB (Fig. 14-4).

14-3. Waterproof printer cover (DKIT-3337RCZZ)

Component parts:

GCOVH6884RCZZ: Waterproof printer cover
GDAI-6658RCZZ: Bracket
HBDGD6845RCZZ: ER3310 logo plate
HBDGD6846RCZZ: ER3311 logo plate
XUPSD30P12000: Screw, M3 × 12, 3 pcs
XWHS40-08100: Washer, 3 pcs

Installation: (Fig. 14-6)

- 1) Remove the printer cover.
- 2) Remove the logo plate ③ from the printer cover.
- 3) Install the bracket ② and waterproof printer cover ④.
- 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 ③ (ER3310: HBDGD6845RCZZ/ER3311: HBDGD6846RCZZ). The logo plate is contained in the package.

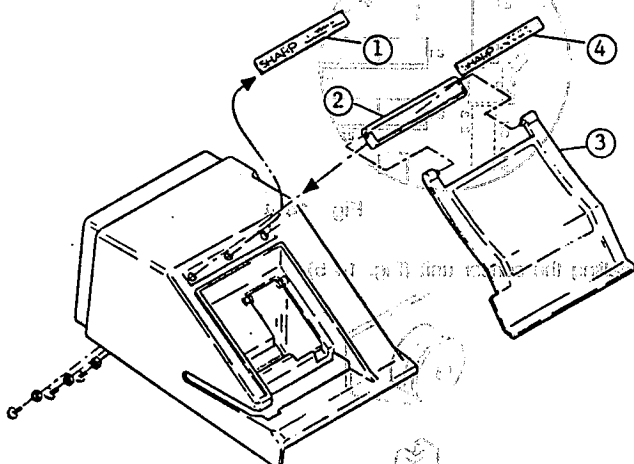


Fig. 14-6

14-4 Changing drawer position

It is possible for the ER3310/3311 to change drawer position. It had been factory installed that the back of the ER3310/3311 extends beyond the drawer. (Fig. 14-7)

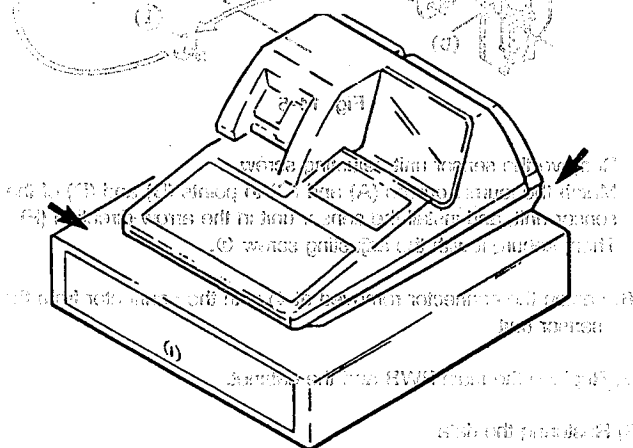


Fig. 14-7

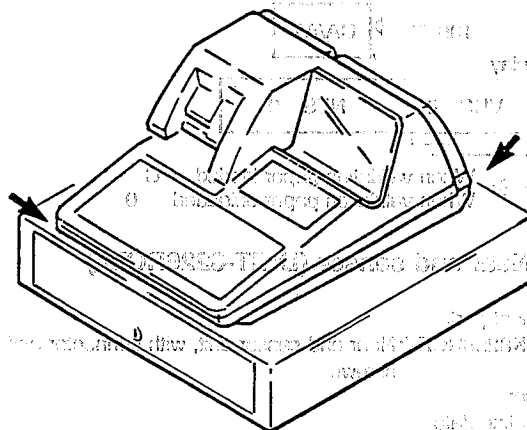


Fig. 14-8

1) Remove two screws from the bottom of the drawer (Fig. 14-9).

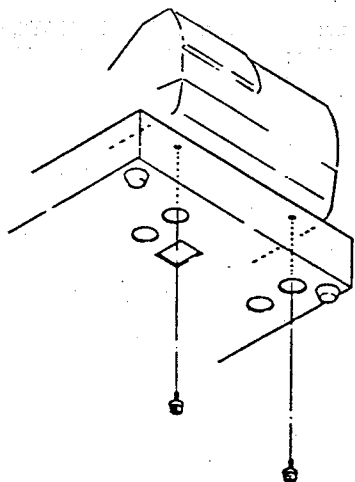


Fig. 14-9

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

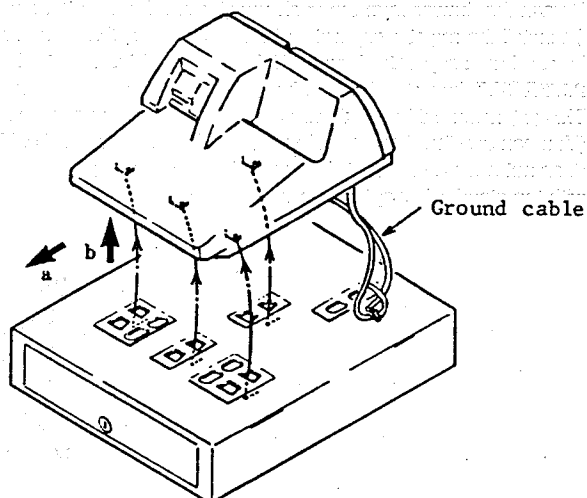


Fig. 14-10

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).

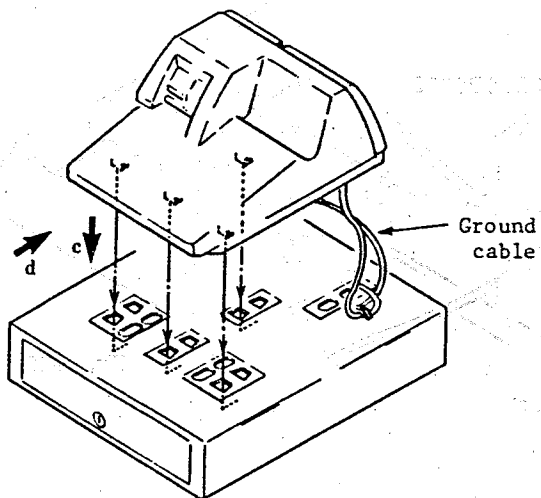


Fig. 14-11

4) Secure the front side of the drawer with the two screws removed at 1). (Fig. 14-12)

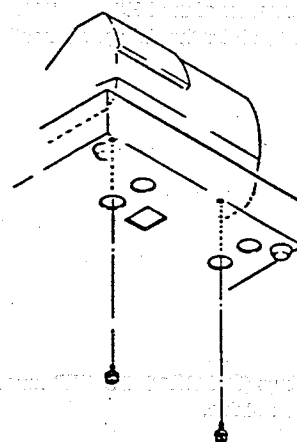


Fig. 14-12

5) With this, the dept changes from 507mm to 460mm which become 47mm shorter (Figs. 14-13 and 14-14).

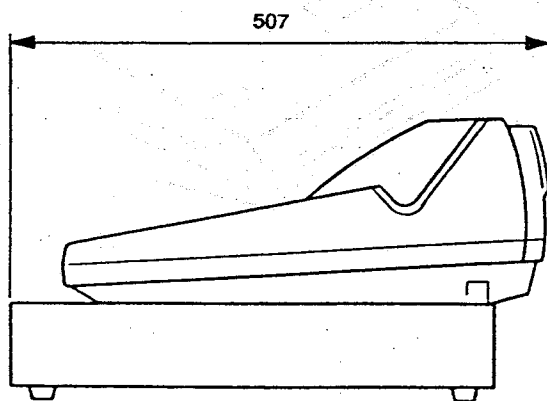


Fig. 14-13

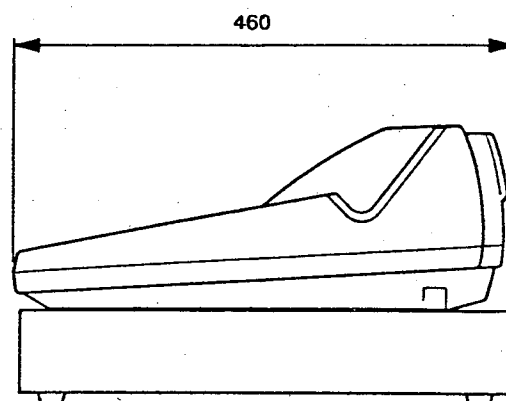


Fig. 14-14

14-5. Separately installing the drawer from the register

Detach the drawer from the cash register in reference to Figs.14-9 and 14-10.

To install the register separately from the drawer, the ground cables in Figs. 14-10 and 14-11 must be removed. The ER34DW3, 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 follow;
(You can use the drawer cable option only if the standard cable does not have a sufficient distance when connecting with the standard or option drawer.)

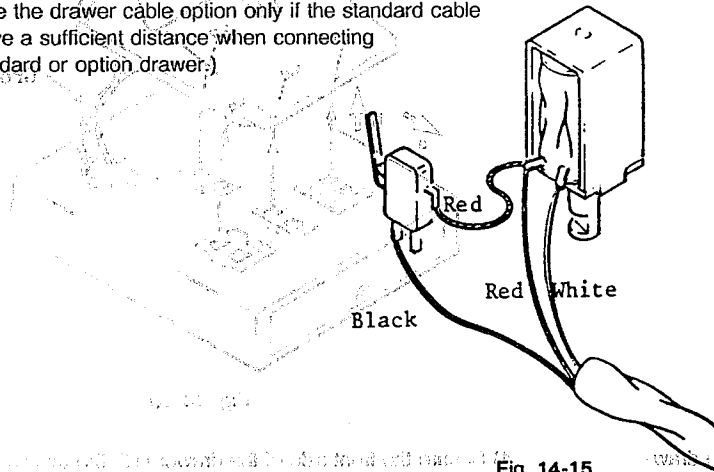


Fig. 14-15

The 3-pin side of the QCNW-2772RCZZ connector must be connected to the drawer connector of the ER3310/3311. Remove from the bottom cabinet the plastic cover ② under the drawer connection slot use it for a strain relief.

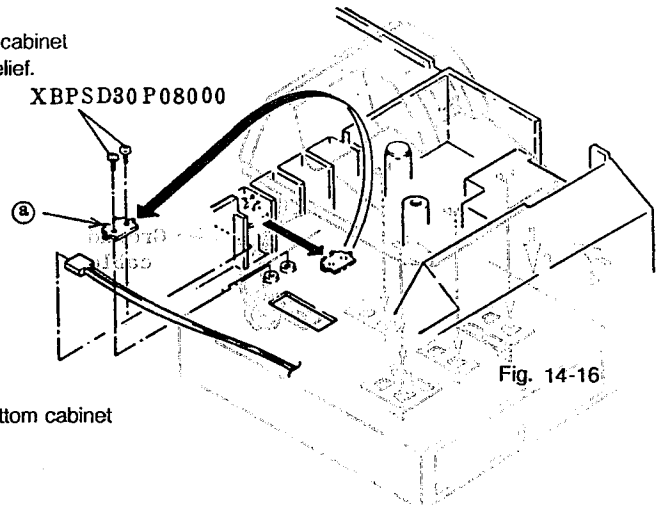


Fig. 14-16

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

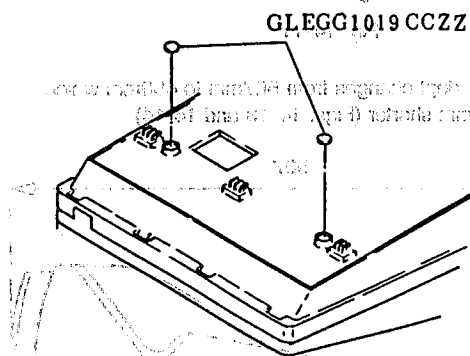
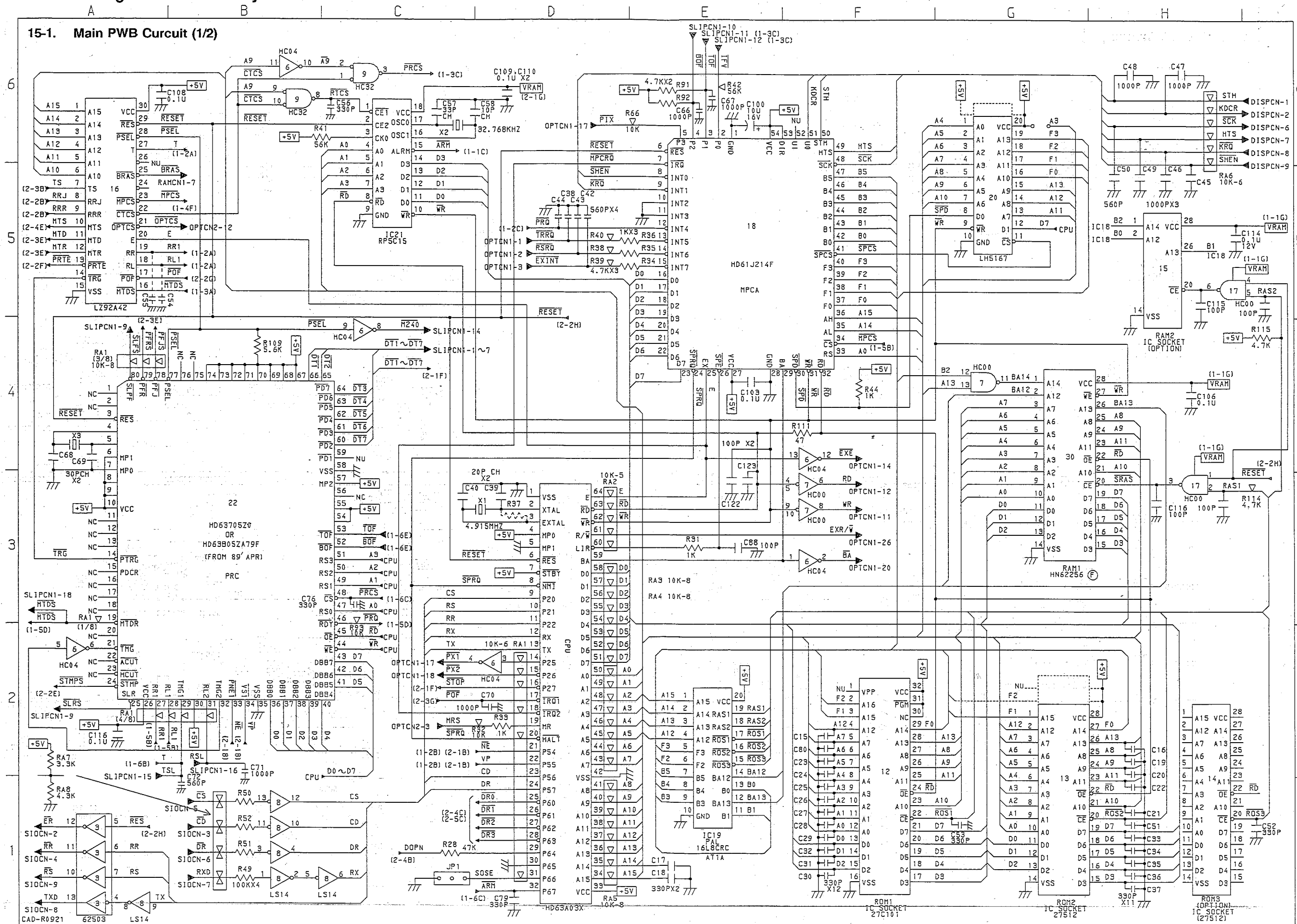


Fig. 14-17

15. Circuit Diagram and PWB Layout

15-1. Main PWB Circuit (1/2)



15-3. Main PWB Connector Table

OPT CN1

GND	15	30	GND
EXE	14	29	RES
POF	13	28	VRAM
RD	12	27	R/W
WR	11	26	NC
D6	10	25	D7
D4	9	24	D5
D2	8	23	D3
D0	7	22	D1
+12V	6	21	NC
PX1	5	20	BA
NC	4	19	NC
EXINT	3	18	NC
RSRQ	2	17	PIX
TRRQ	1	16	PX2

OPT CN2

GND	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
MRS	3	18	NC
NC	2	17	A0
+24V	1	16	+24V

RAM CN1

1	B2
2	B0
3	B1
4	B4
5	B3
6	B5
7	BRAS
8	RESET
9	A7
10	A6
11	A5
12	A4
13	A3
14	A2
15	A1
16	A0
17	GND
18	GND

RAM CN2

1	GND
2	VRAM
3	WR
4	A8
5	A9
6	A11
7	RD
8	A10
9	D7
10	D6
11	D0
12	D5
13	D1
14	D4
15	D2
16	D3
17	GND
18	GND

DISP CN

1	STH
2	KDCR
3	+5V
4	GND
5	GND
6	SCR
7	HTS
8	KRO
9	SHEN
10	BZ
11	-32V
12	VF1
13	VF2

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	STHP
7	
8	MOTOR

PR CN3

1	GND
2	TMS
3	TK
4	RJS
5	RJA
6	+5V
7	RRR
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	R240
15	TSL
16	RSL
17	NC
18	MTDS
19	TRG
20	EXE

SLIP CN2

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

PS CN

1	VINA
2	VINB

MM CN

1	V+
2	GNDP

SIO CN

1	GND
2	ER
3	CD
4	RR
5	CS
6	DR
7	RXD
8	TXD
9	RS

VBT CN1

1	VBT1
2	GND

VBT CN2

1	VBT2
2	GND

DR CN1

1	DRAW0
2	DS
3	+24V

DR CN2

1	DRAW1
2	DS
3	+24V

VPS CN

1	+5V
2	VDS
3	VDK

NES CN

1	NES
2	GND

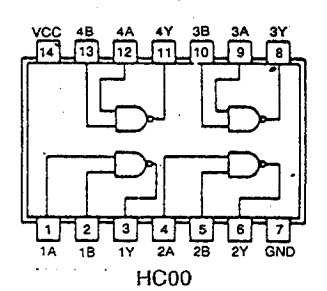
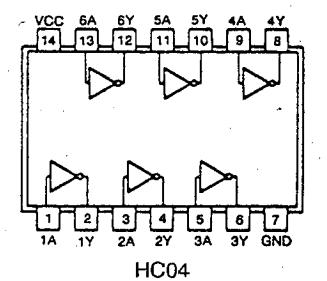
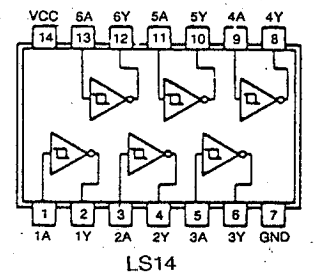
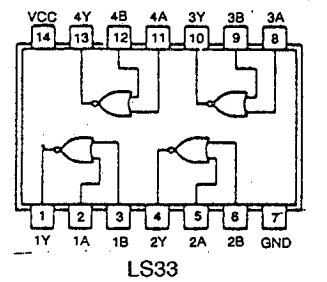
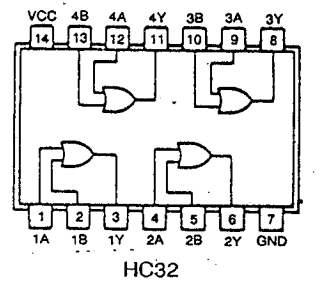
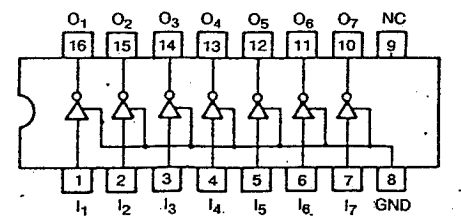
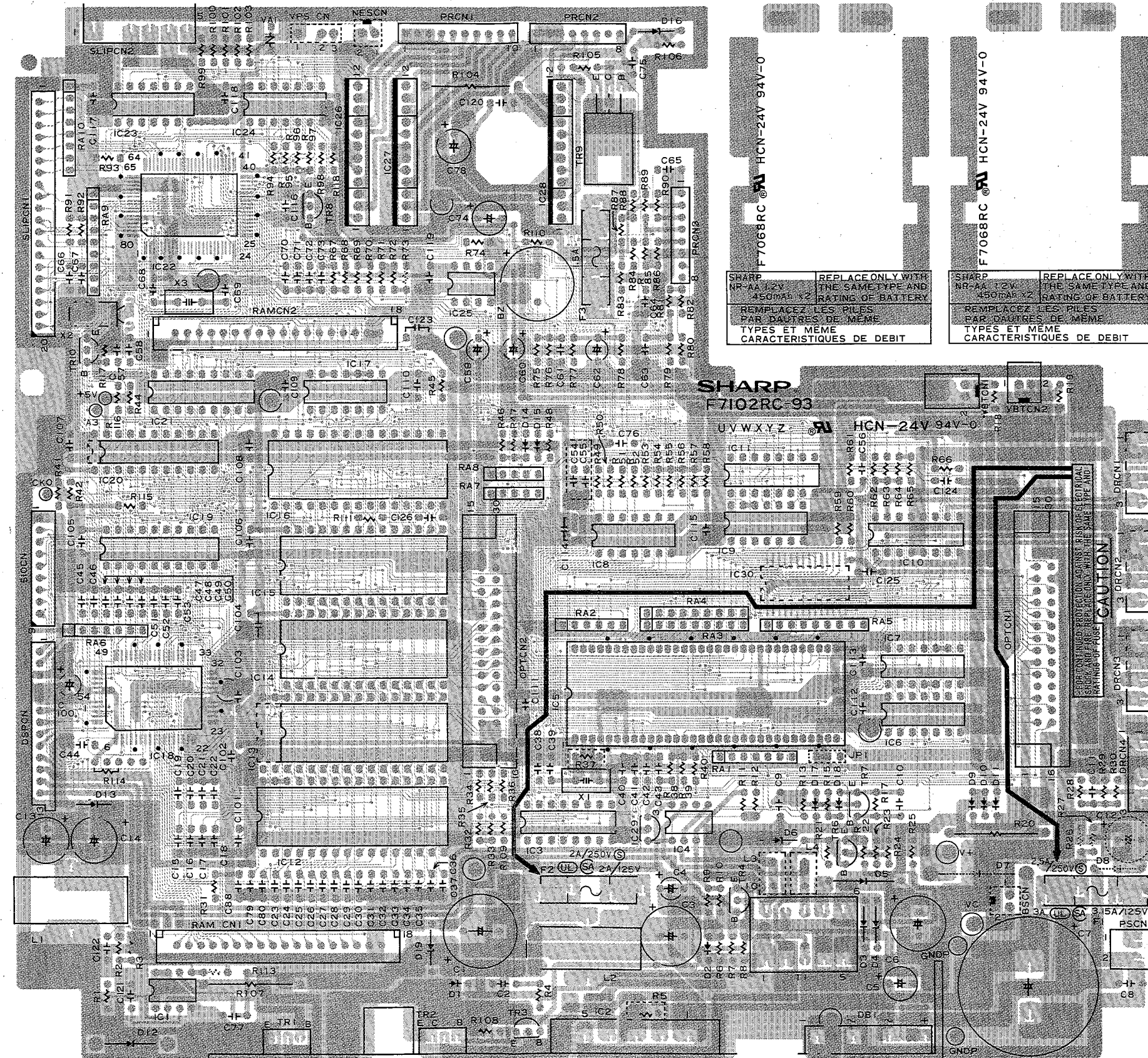
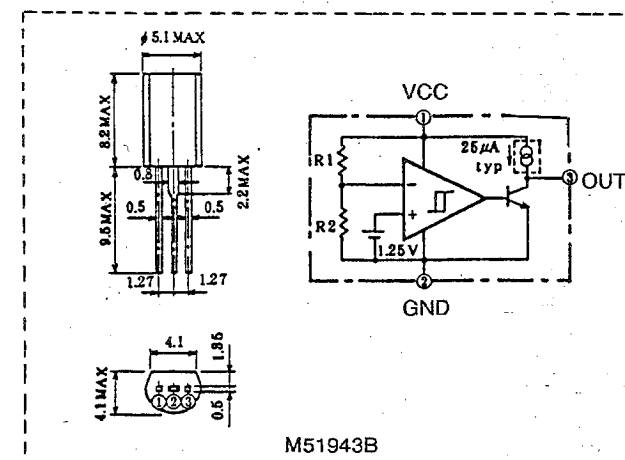
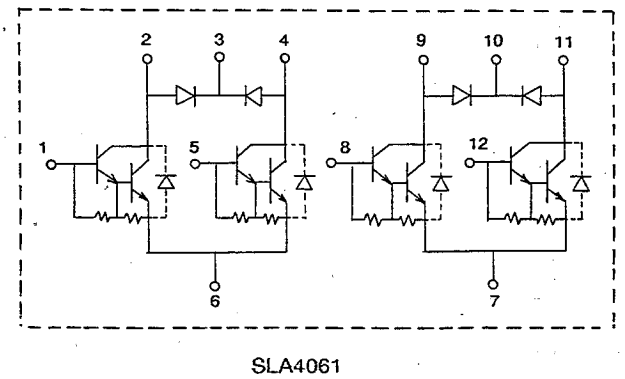
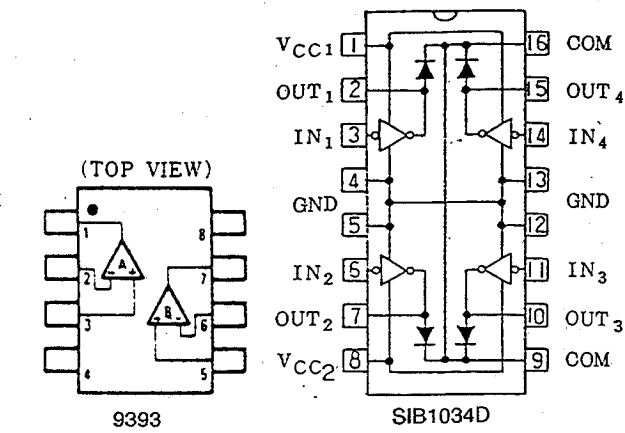
DR CN3

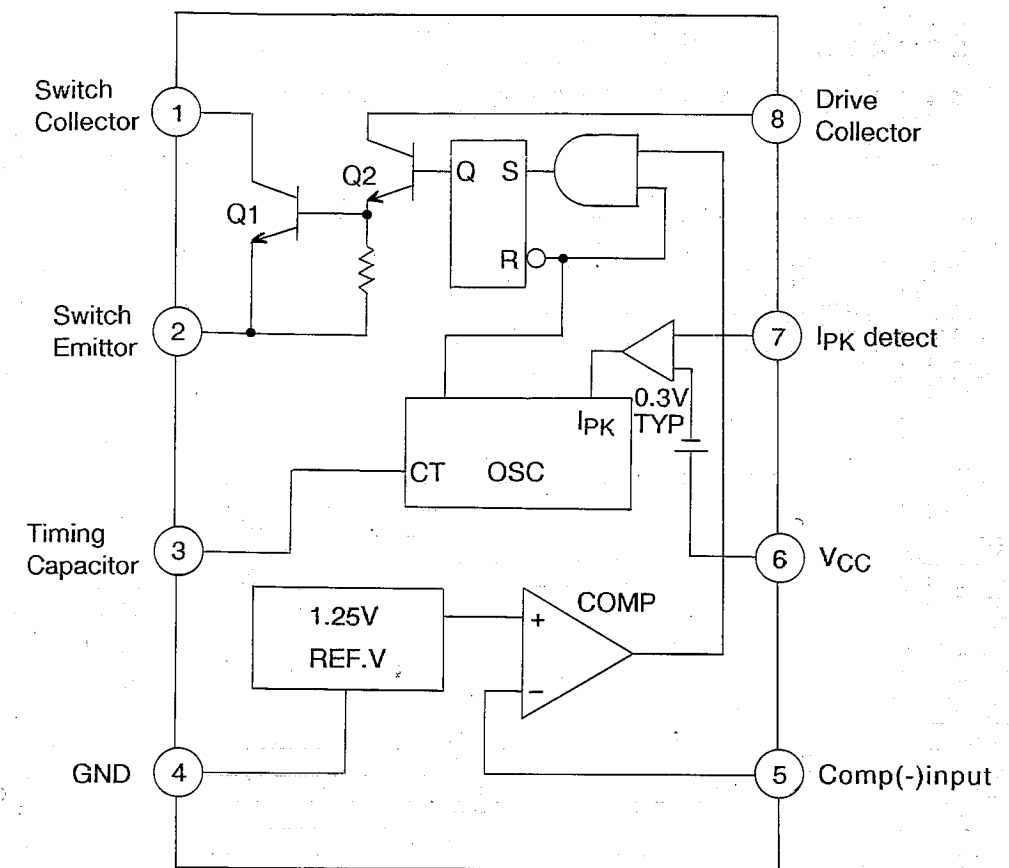
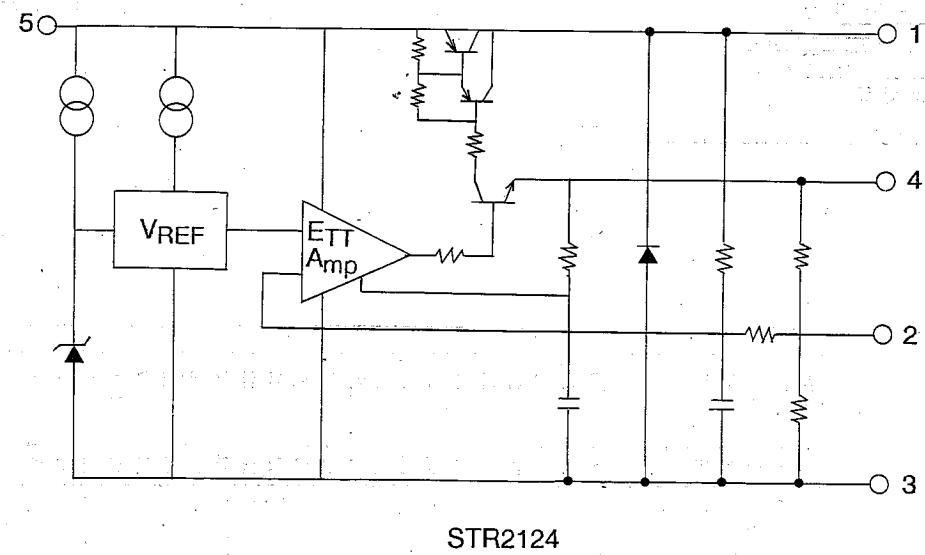
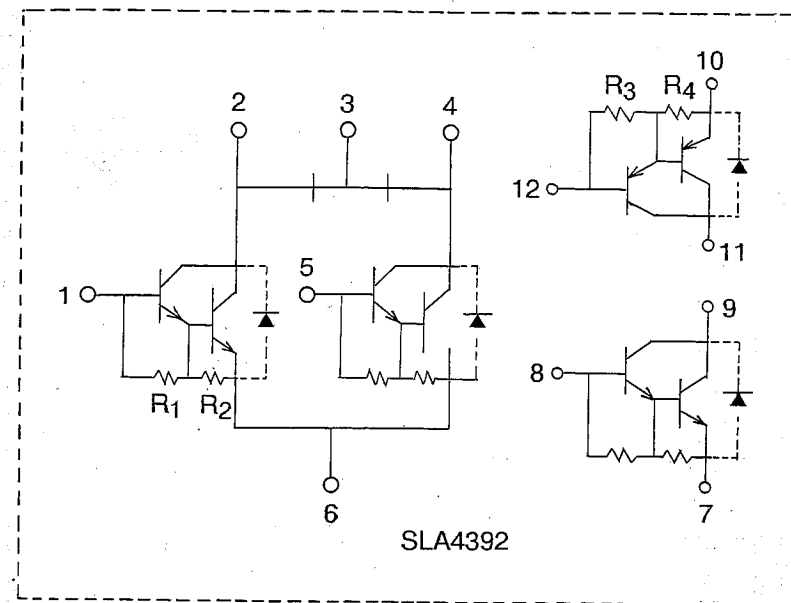
1	DRAW2
2	DS
3	+24V

DR CN4

1	DRAW3
2	DS
3	+24V

15-4. Main PWB Layout

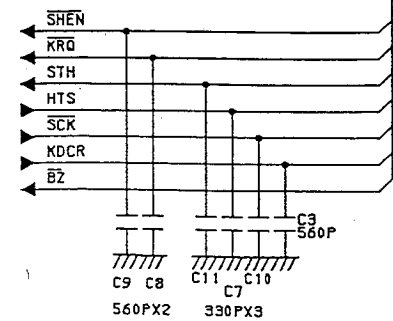




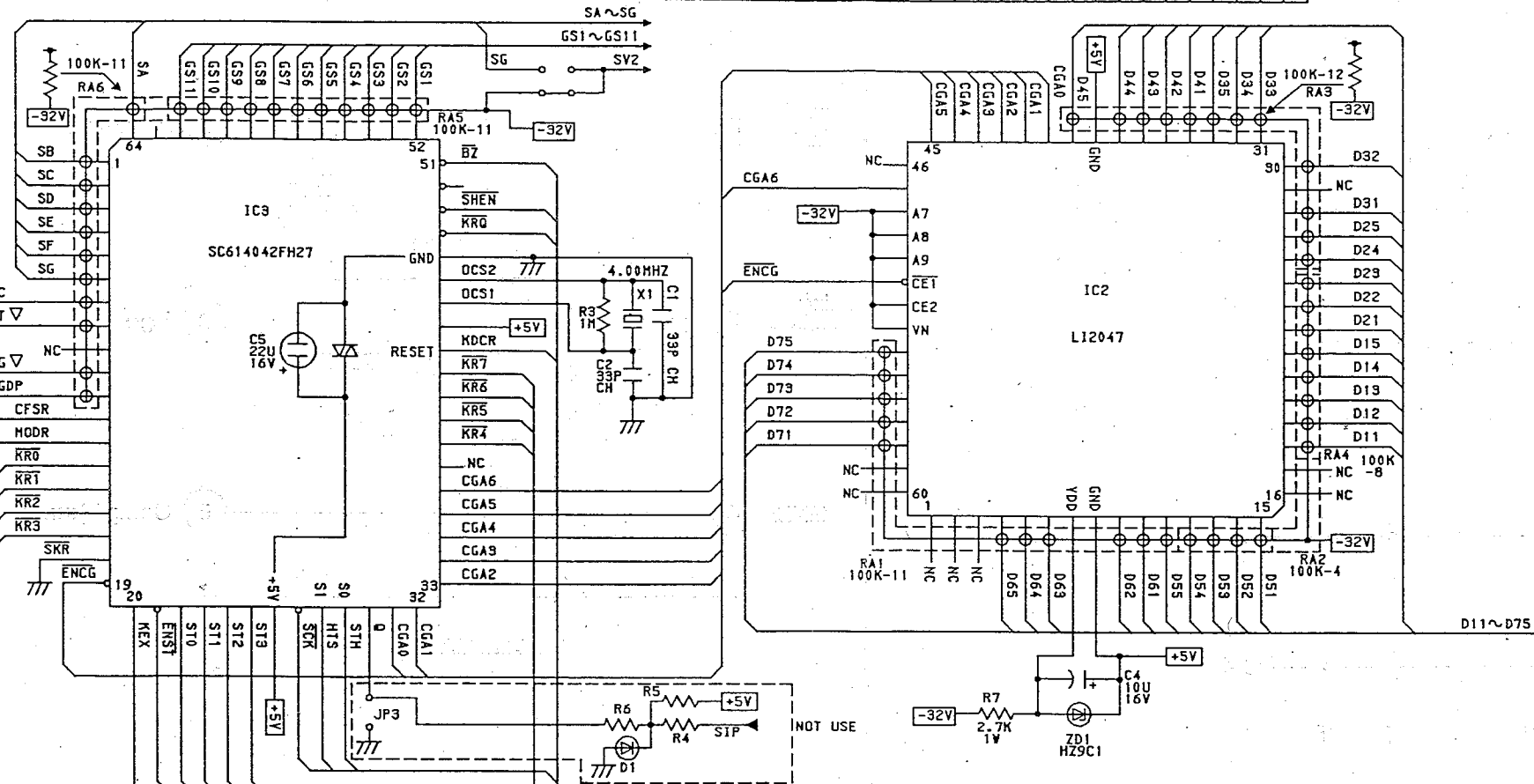
15-5. Display PWB Circuit

NO	SIGNAL
1	STH
2	KDCR
3	+5V
4	GND
5	GND
6	SCK
7	HTS
8	KRQ
9	SHEN
10	BZ
11	-32V
12	VF1
13	VF2

NO	SIGNAL
A1	ST0
A2	ST1
A3	ST2
A4	ST3
A5	+5V
A6	KR7
A7	KR6
A8	KR5
A9	KR4
B1	GND
B2	CFSR
B3	MODR
B4	KRQ
B5	KR1
B6	KR2
B7	KR3
B8	GND
B9	KEX

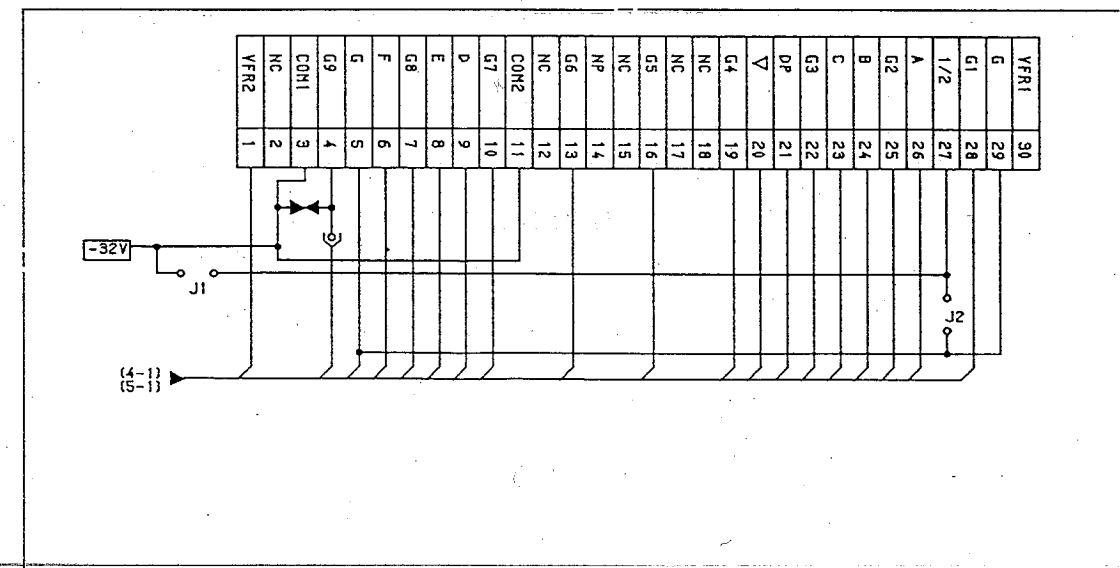


NO	SIGNAL
1	ST0
2	ST1
3	ST2
4	ST3
5	+5V
6	KR7
7	KR6
8	KR5
9	KR4
10	GND
11	CFSR
12	MODR
13	KRQ
14	KR1
15	KR2
16	KR3
17	GND
18	KEX
19	ST0
20	ST1
21	ST2
22	ST3
23	+5V
24	KR7
25	KR6
26	KR5
27	KR4
28	GND
29	CFSR
30	MODR
31	KRQ
32	KR1
33	KR2
34	KR3
35	GND
36	KEX
37	ST0
38	ST1
39	ST2
40	ST3
41	+5V
42	KR7
43	KR6
44	KR5
45	KR4
46	GND
47	CFSR
48	MODR
49	KRQ
50	KR1
51	KR2
52	KR3
53	GND
54	KEX
55	ST0
56	ST1
57	ST2
58	ST3
59	+5V
60	KR7
61	KR6
62	KR5
63	KR4
64	GND
65	CFSR
66	MODR
67	KRQ
68	KR1
69	KR2
70	KR3
71	GND
72	KEX
73	ST0
74	ST1
75	ST2
76	ST3
77	+5V
78	KR7
79	KR6
80	KR5
81	KR4
82	GND
83	CFSR
84	MODR
85	KRQ
86	KR1
87	KR2
88	KR3
89	GND
90	KEX
91	ST0
92	ST1
93	ST2
94	ST3
95	+5V
96	KR7
97	KR6
98	KR5
99	KR4
100	GND
101	CFSR
102	MODR
103	KRQ
104	KR1
105	KR2
106	KR3
107	GND
108	KEX

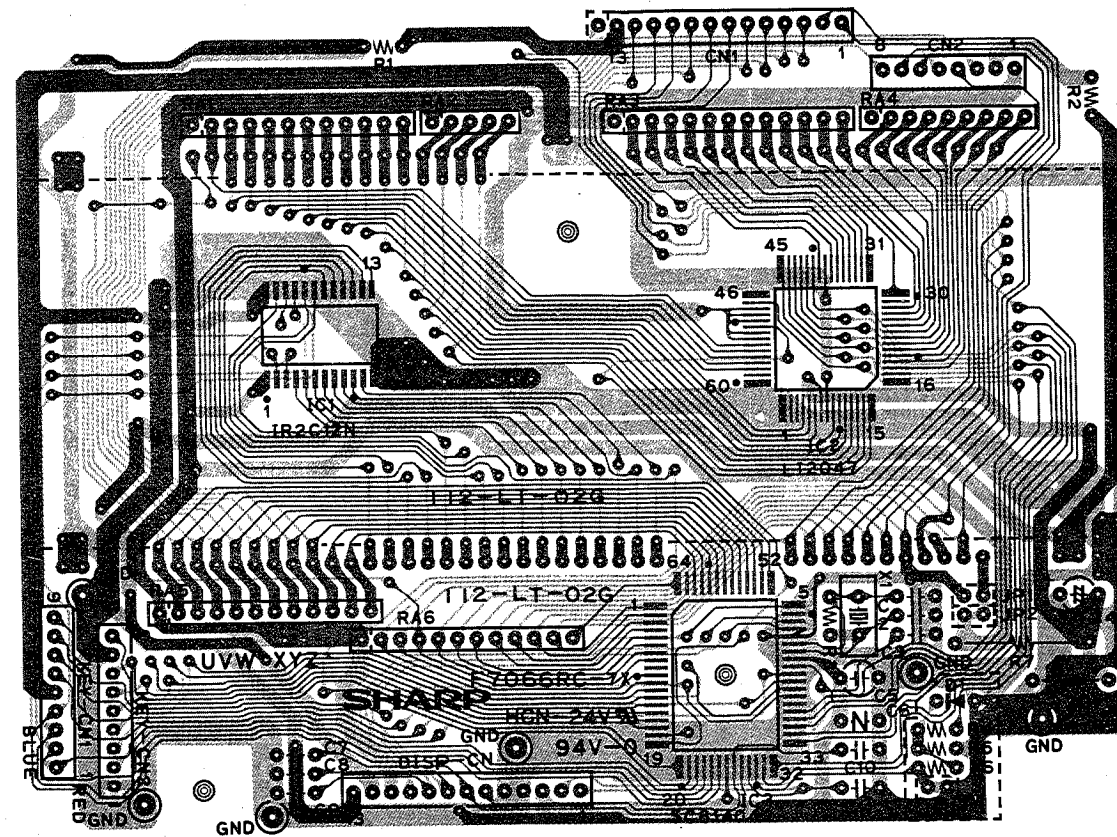


NO	SIGNAL
1	-32V
2	VFR1
3	G1
4	A
5	G2
6	B
7	C
8	G3

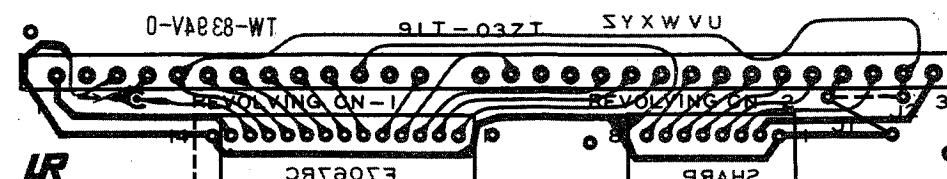
NO	SIGNAL
1	SEGDP
2	SEG V
3	G4
4	G5
5	G6
6	G7
7	D
8	E
9	G8
10	F
11	G
12	G9
13	VFR2
14	SIP



15-6. Display PWB Layout



15-7. Pop-up Display PWB Layout



15-8. ER-3310 Keyboard Circuit

(CN4) RECEIPT SW

NO	SIGNAL
1	RS1
2	CFSR

(CN1) CASHIER SW1

NO	SIGNAL
1	C0
2	C1
3	CFSR

(CN2) CASHIER SW2

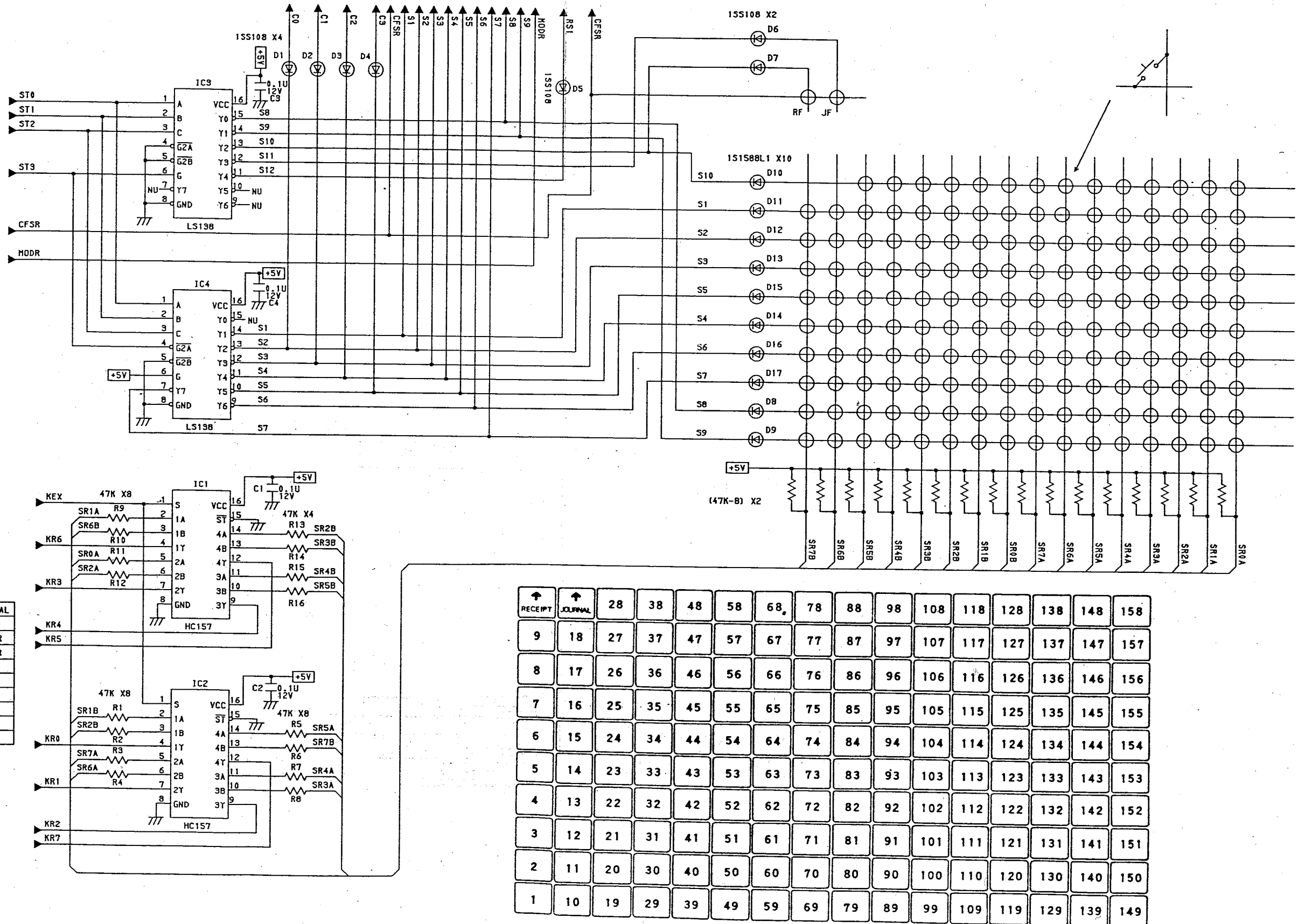
NO	SIGNAL
1	C2
2	C3
3	CFSR

(CN3) MODE SW CN

NO	SIGNAL
1	MODR
2	MODR
3	S10
4	S9
5	S8
6	S7
7	S6
8	S5
9	S4
10	S3
11	S2
12	S1

(CN6) MAIN CN

SIGNAL	A	B	SIGNAL
ST0	1	1	GND
ST1	2	2	CFSR
ST2	3	3	MODR
ST3	4	4	KR0
+5V	5	5	KR1
KR7	6	6	KR2
KR6	7	7	KR3
KR5	8	8	GND
KR4	9	9	KEX



CAD-R0604

15-9. ER-3311 Keyboard Circuit

(CN4)
RECEIPT SW

NO	SIGNAL
1	RS1
2	CFSR

(CN1)
CASHER SW1

NO	SIGNAL
1	C0
2	C1
3	CFSR

(CN2)
CASHER SW2

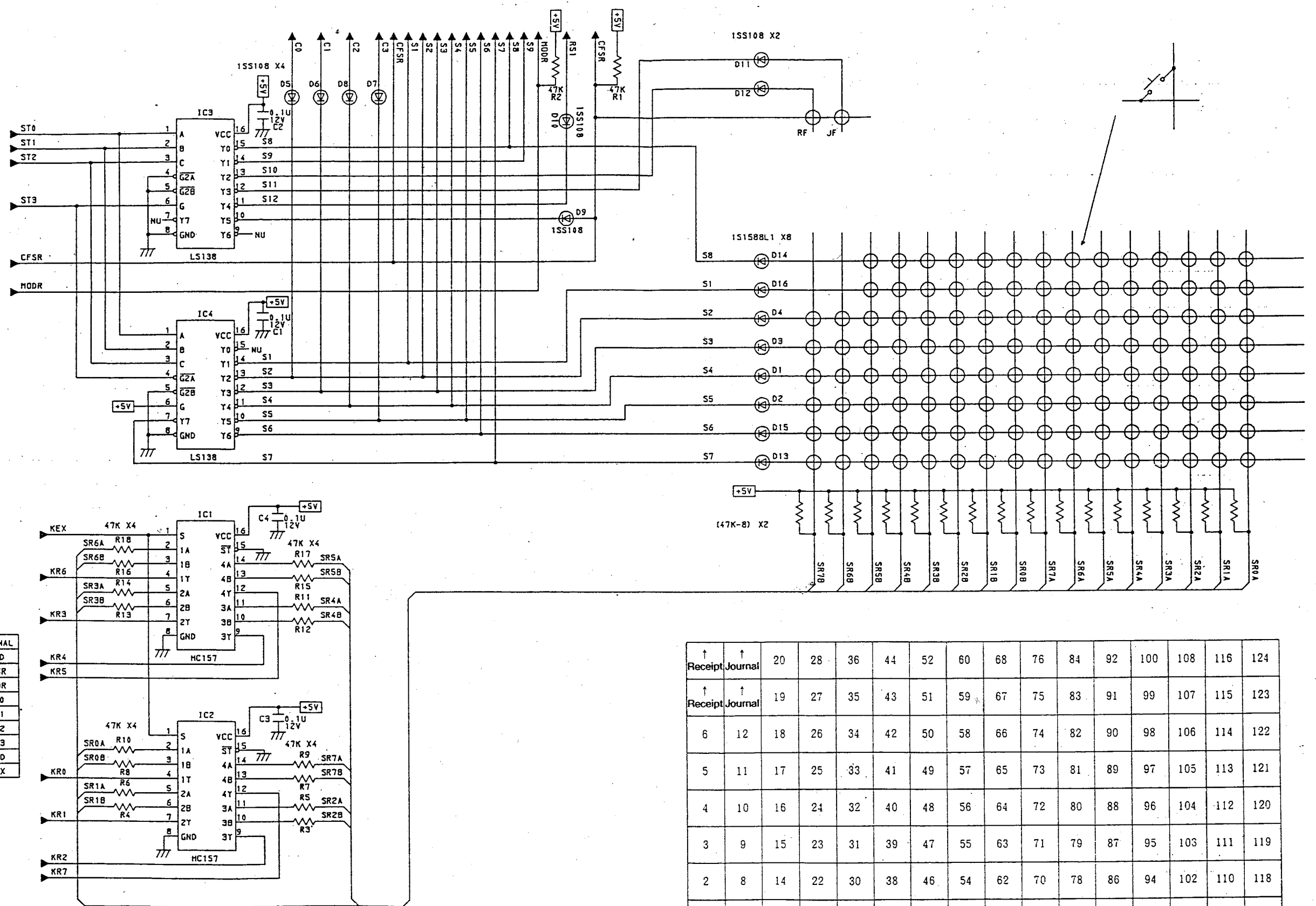
NO	SIGNAL
1	C2
2	C3
3	CFSR

(CN3)
MODE SW CN

NO	SIGNAL
1	MODR
2	MODR
3	S10
4	S9
5	S8
6	S7
7	S6
8	S5
9	S4
10	S3
11	S2
12	S1

(CN6)
MAIN CN

SIGNAL	B	A	SIGNAL
ST0	1	1	GND
ST1	2	2	CFSR
ST2	3	3	MODR
ST3	4	4	KR0
+5V	5	5	KR1
KR7	6	6	KR2
KR6	7	7	KR3
KR5	8	8	GND
KR4	9	9	KEX



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

SHARP PARTS GUIDE

ELECTRONIC
CASH REGISTER

ER-3310
MODEL ER-3311

SRV KEY: LKGIM7113RCZZ
PRINTER: M-2640

CONTENTS

- 1 Exteriors (Cabinet, printer etc.)
- 2 ER-3310 Keyboard unit
- 3 ER-3311 Keyboard unit
- 4 Packing material & Accessories
- 5 Drawer box unit
- 6 Main PWB unit
- 7 Display PWB unit
- 8 Custom display PWB unit
- 9 Articles of consumptions
- 10 Service options
- 11 AC cord
- Index

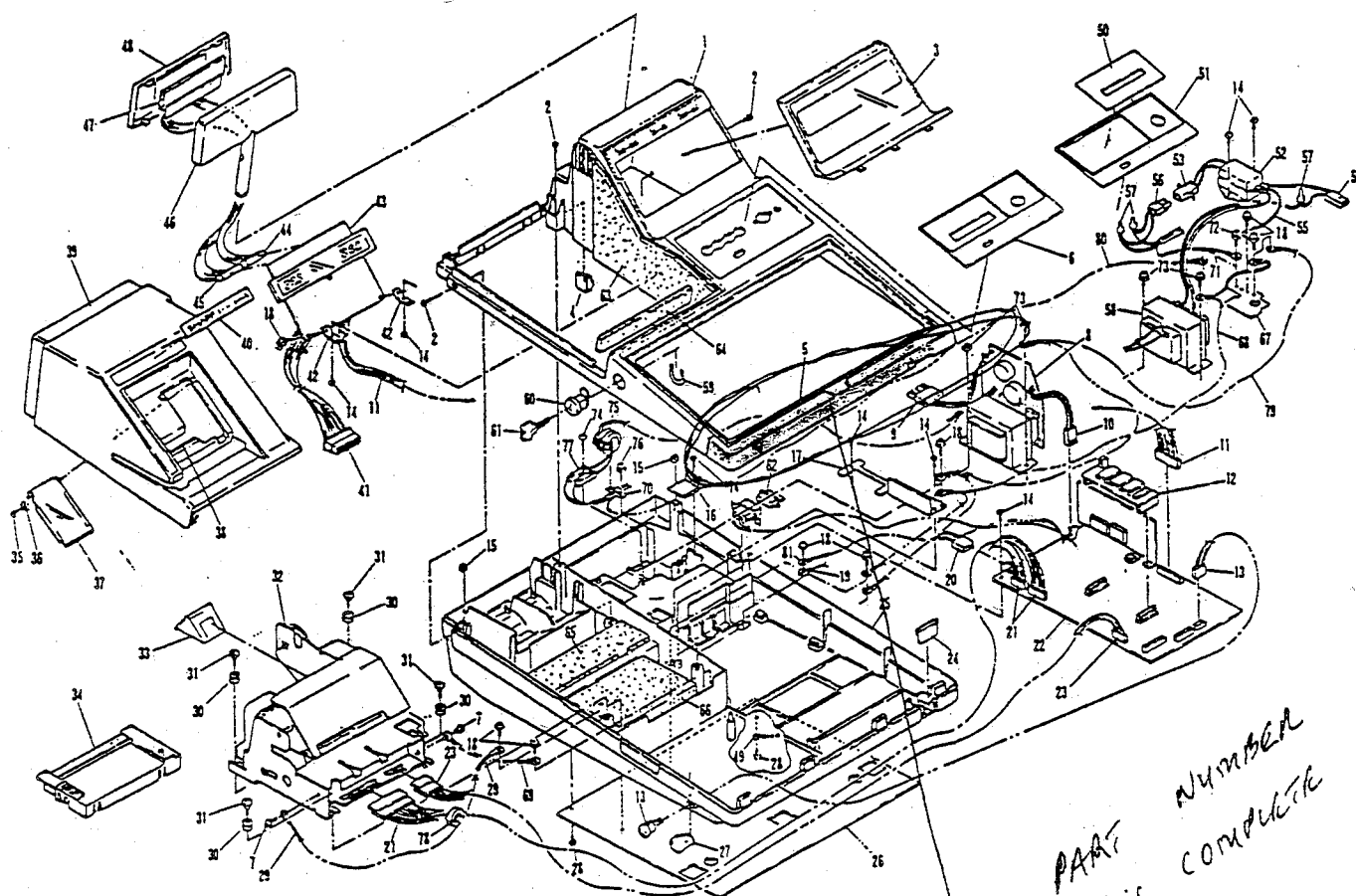
Parts marked with "▲" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

1 Exteriors(cabinet,printer etc.)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	GCABB6917RCZZ	AT		D	Top cabinet
2	XBBSC30P10000	AA		C	Screw (3×10)
3	PFI LW6826RCZZ	AM		D	Display filter
4	LHLDW5034BCZZ	AB		C	Wire holder (CKN-10)
5	HPNLC6746RCZZ	AG		D	Key pad (ER3310)
5	HPNLC6753RCZZ	AL		D	Key pad (ER3311)
6	HDECE6743RCZZ	AH		D	Switch panel
7	HDECE6744RCZZ	AD		D	Push switch panel
8	XBPSD40P08KS0	AA		C	Screw (4×8KS)
9	RTRNP6782RCZZ	AZ		B	Power transformer
10	RFILN6001RCZZ	AT		C	Noise filter
11	GITA U6723RCZZ	AQ		D	Main earth plate
12	QC NW-7116RCZZ	AE		C	Earth wire G/Y
13	QC NW-7115RCZZ	AN		C	SIO connector
14	XUBSD30P08000	AA		C	Screw (3×8)
15	XNESD30-24000	AA		C	Nut (3NS)
16	HPNLC6747RCZZ	AG		C	AC cord panel
17	LANGK7303RCZZ	AG		C	Option angle
18	XBPSD30P06KS0	AA		C	Screw (3×6KS)
19	QC NW-7125RCZZ	AD		C	GND wire 3
20	XBPBZ40P06K00	AA		C	Screw (4×6K)
21	XBPSD40P06K00	AA		C	Screw (4×6K)
22	CPWBF7102RC01	CN		E	Main PWB unit
23	QC NW-7039RCZZ	AB		C	Earth wire
24	GFTAF6709RCZZ	AC	N	D	Front cover
25	GCABA7037RCZZ	AY		D	Bottom cabinet
26	GITA U6735RCZZ	AM		D	Base plate
27	GFTAS6710RCZZ	AB		D	Loader cover
29	QC NW-7121RCZZ	AD		C	Earth wire (Printer↔Base plate)
30	PCUS-4101CCZZ	AB		C	Printer cushion
31	LX-BZ1007CCZZ	AB		C	Screw (3×10KS)
32	KI-OB6706RCZZ	CA		E	Printer(without near end sensor) (M2640)
33	PSTM-6658RC01	AR		C	Stamp (YOUR RECEIPT THANK YOU)
35	XUPSD20P04000	AA		C	Screw (2×4)
36	XWHS D20-04060	AA		C	Washer (M2)
37	PFI LW6714RCZZ	AD		D	Journal filter
38	PCUT-1027CCZZ	AC		C	Paper cutter
39	GC OVH6878RCZZ	AR		D	Printer cover
40	HBDGD6845RCZZ	AC	N	D	SHARP badge (ER3310)
40	HBDGD6846RCZZ	AC	N	D	SHARP badge (ER3311)
41	QC NW-7112RCZZ	AP		C	Key cable
42	LANGK7227RCZZ	AC		C	Display angle
43	CPWBF7066RC01	BW		E	Display PWB unit
44	QC NW-7110RCZZ	AM		C	Pop-up cable 1
45	QC NW-7111RCZZ	AK		C	Pop-up cable 2
46	GCABB6918RCZZ	AH		D	Customer cabinet
47	CPWBF7067RC01	BA		E	Customer display PWB unit
48	PFI LW6825RCZZ	AK		D	Customer filter
49	QC NW-7122RCZZ	AD		C	Earth wire(Base plate↔Drawer)
50	LANGK7278RCZZ	AD		C	Cable angle
51	XBPSD30P04K00	AA		C	Screw (3×4K)
52	LKGIM7108RC01	AD		B	Key for printer cover
53	LKGIW7107RC01	AK		B	Printer cover key
54	MSPRT6689RC01	AC		C	Clip
55	QC NW-7120RCZZ	AE		C	Static wire (Keyboard↔Base plate)
56	XUBSD30P06000	AA		C	Screw (3×6)
57	RCORF6627RCZZ	AK		C	Ring core (31MM)
58	QC NW-7117RCZZ	AE		C	AC cable
59	PRBN-2320RCZZ	AX		S	Ribbon cassette
60	QTANP0004HCZZ	AB		C	Lug terminal (4φ)
61	QTANP1094CCZZ	AA		C	Terminal
62	QC NW-7113RCZZ	AP		C	Lead wire (Printer 1)
63	QC NW-7114RCZZ	AK		C	Printer connector (CN3)
64	QC NW-7109RCZZ	AN		C	Connector (Main↔Display)
65	LBNDJ0004UCZZ	AA		C	Cable band (TE10K)
66	QC NW-7128RCZZ	AC		C	Battery cable
67	UBATN6627RCZZ	AV		B	Battery
68	XBPSD30P10KS0	AB		C	Screw (3×10KS)
69	RCORF5003SCZZ	AK		C	Core
70	XUPSD30P12000	AA		C	Screw (3×12)
71	LHLDW0006SCZZ	AB		C	Holder (NK-3N)
72	PCLI-0004UCZZ	AC		C	Clip (CK-10F)
73	PCOVW6632RCZZ	AC		C	Key cover

1 Exteriors(cabinet,printer etc.)

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
70	LHLDW4081CCZZ	AC		C	AC cord holder. (TQ,TR,TS)
71	QTANP0004HCZZ	AB		C	Lug terminal (4φ) (U.S.A.,CANADA)
72	XBPBZ40P06K00	AA		C	Screw (4×6K) (Except TQ,TR,TS)
73	XBPBZ40P08K00	AA		C	Screw (4×8KS)
74	XUPSD30P14000	AA		C	Screw (3×14)
75	RCORF6629RCZZ	AQ		C	Core (ESD-R-25L) (Except U.S.A.,CANADA)
76	XBPBZ40P08K00	AA		C	Screw (3×8KS)
77	QTANP6629RCZZ	AF		C	Block terminal (Except U.S.A.,CANADA)
78	RCORF6627RCZZ	AK		C	Ring core (31MM) (TQ,TR,TS)
79	QCNW-7035RCZZ	AD	N	C	Earth wire (KA,KB)
80	QTANP0004HCZZ	AB		C	Lug terminal (4φ) (KA,KB)
81	QCNW-7071RCZZ	AE	N	C	Earth wire(CPU)
101	LBNDJ0004UCZZ	AA		C	Cable band (TE10K) (for ring core No75 etc.)
102	LBNDJ2003SCZZ	AA		C	Cable clamp(large) (for connector No54)(U.S.A.,CANADA)

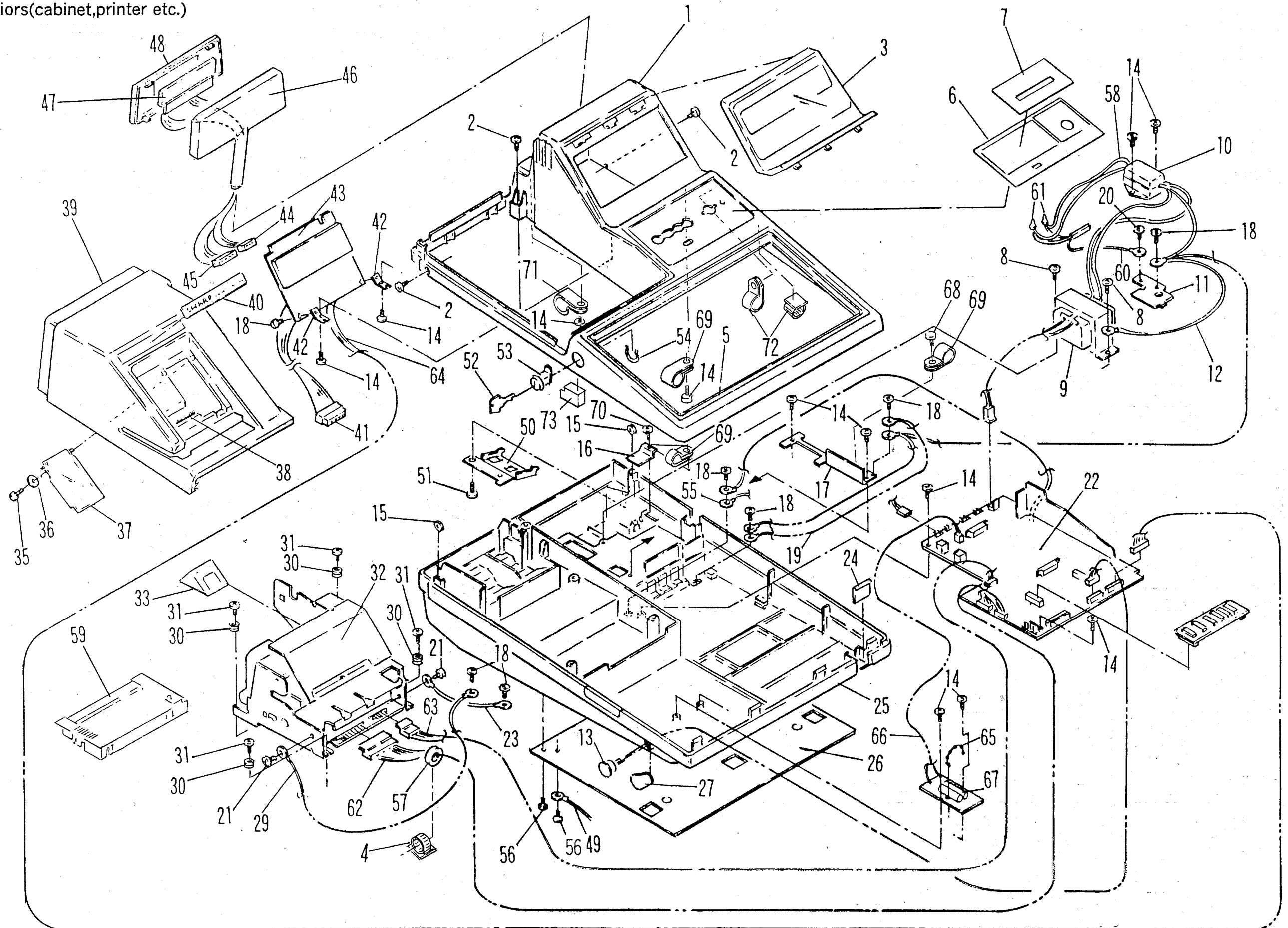


← NEED PART NUMBER FOR THIS PORTION

CCABB6917RC02
CCABB6917RC02

Please replace page 2 of the ER-3100 PARTS GUIDE with this.

1 Exteriors(cabinet,printer etc.)



2 ER-3310 Keyboard unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	PSHEZ6729RCZZ	AW		C	Key sheet AN
2	PSHEZ6720RCZZ	AG		C	Character sheet
3	PSHEZ6688RCZZ	AQ		C	Key sheet B
4	LKGIM7110RCZZ	AG		B	Master key (MA)(2pcs)
	LKGIM7111RCZZ	AG		B	Operator key (OP)(2pcs)
	LKGIM7129RCZZ	AE		B	Sub master key (SM)(2pcs)
6	XBPSD30P06KS0	AA		C	Screw (3×6KS)
8	QCNW-7124RCZZ	AB		C	GND wire 2 (To switch angle)
9	XBPSD20P04000	AA		C	Screw (2×4)
10	XUBSD30P06000	AA		C	Screw (3×6)
11	QSW-Z6774RCZZ	AU		B	Switch
13	QSW-Z6773RCZZ	AN		B	Slide switch
14	0ALZD2006-670	AA		C	Screw (Z-D2006-670)
15	0AL401KFG-001	BA		C	Key PWB (401KFG-001-90R)(Board only)
16	0AL421KFG-001	BB		B	Key rubber sheet (421KFG-001-90R)
17	XUBSD30P08000	AA		C	Screw (3×8)
18	0AL101KFG-001	AV		C	Housing (101KFG-001-90R)
19	LANGT7246RCZZ	AG		C	Angle(for switch installment)
20	LANGK7314RCZZ	AC		C	Clerk switch angle
21	LKGiW7256RCZZ	AP		B	Mode key switch
24	QCNW-7120RCZZ	AE		C	Earth wire (Keyboard→Base plate)
26	XBSSD30P06000	AA		C	Screw (3×6)
27	PZETE6651RCZZ	AB		C	Insulation sheet (for slide switch)
28	PZETE6652RCZZ	AB		C	Insulation sheet (for mode switch)
101	0ALW-P9002-01	AC		B	Connector (W-P9002#01)(2pin)
102	0ALW-P9003-01	AC		B	Connector (W-P9003#01)(3pin)
103	0ALW-P9012-01	AF		C	Connector (W-P9012#01)(12pin)
104	0ALW-P0718-01	AG		C	Connector (W-P0718#01)(18pin)
105	0ALZT03001588	AA		B	Diode (1S1588)(Z-T0300-01588)
106	0ALZT05010108	AD		B	Diode (1SS108)(Z-T0501-00108)
107	0ALZZ05200138	AQ		B	IC (LS138)(Z-Z0520-00138)
108	0ALZY05600045	AQ		B	IC (HC157)(Z-Z0560-00045)
109	0ALZW88347318	AF		B	Block resistor (47KΩ×8)(Z-W0883-47318)
110	0ALZW8AA473DJ	AA		C	Resistor (47KΩ)(Z-W08AA-473DJ#01)
111	0ALZV12CK104E	AD		C	Capacitor (0.1μF)(Z-V12CK104EMSR#1)
501	DUNTK8196RCZZ	BK		E	Keyboard unit(flat type)

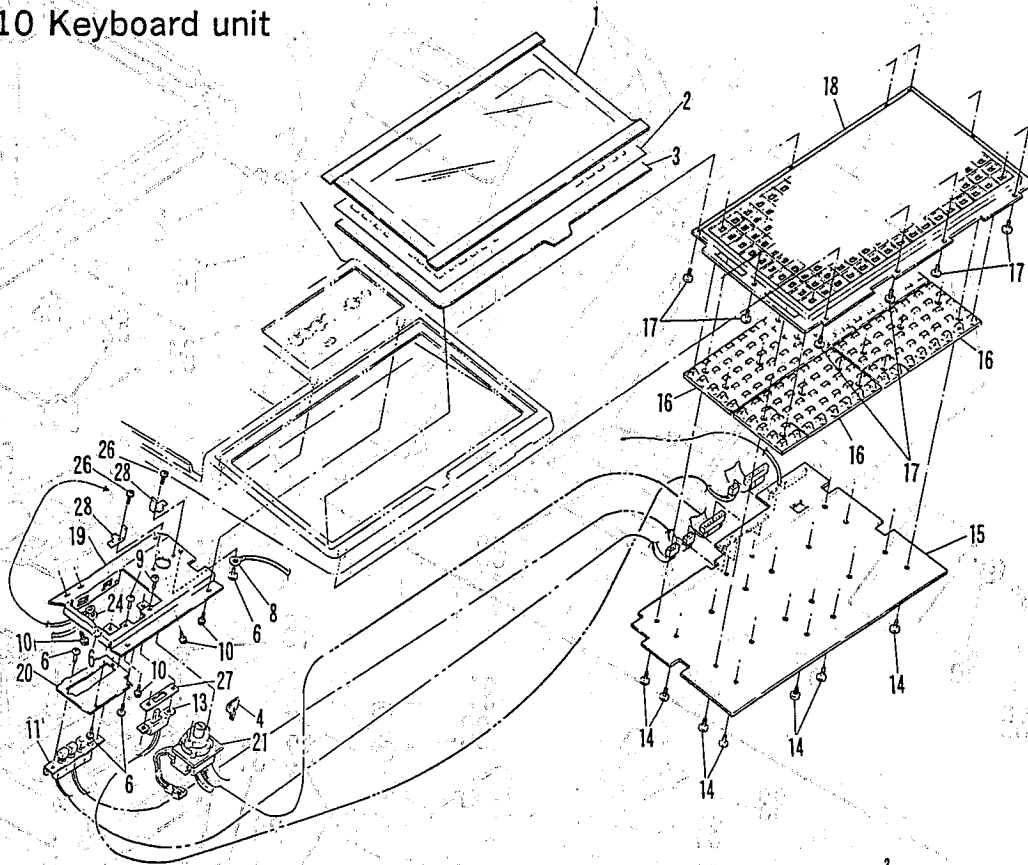
3 ER-3311 Keyboard unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	HDECE6774RCZZ	AW		D	Decoration panel for key
2	0DU31KK004A//	AC		C	Dummy key cover (1×6)
3	0DU31KK003A//	AC		C	Dummy key cover (1×5)
4	LKGIM7110RCZZ	AG		B	Master key (MA)(2pcs)
	LKGIM7111RCZZ	AG		B	Operator key (OP)(2pcs)
	LKGIM7129RCZZ	AE		B	Sub master key (SM)(2pcs)
6	XBPSD30P06KS0	AA		C	Screw (3×6KS)
7	LANGT7246RCZZ	AG		C	Angle(for switch installment)
8	XUSSD30P06000	AA		C	Screw (3×6)
9	XBPSD20P04000	AA		C	Screw (2×4)
10	XBSSD30P06000	AA		C	Screw (3×6)
12	LKGiW7256RCZZ	AP		B	Mode key switch
13	QSW-Z6773RCZZ	AN		B	Slide switch
14	0DUKC110A01A//	AA		C	Key cap (1×1)
15	0DUKT110A02A//	AA		C	Key top (1×1)
16	0DUKC120A01A//	AB		C	Key cap (1×2)
17	0DUKT120A02A//	AB		C	Key top (1×2)
18	0DUKKA0A001//	AD		B	Key switch (for 1×1,1×2 Right)
19	0DUKKA0A002//	AD		B	Key switch (for 1×2 Left)
20	0DU32KK004A//	AV		C	Panel
21	0DUKD110A3311	AH	N	C	Key top unit
22	QCNW-7112RCZZ	AP		C	Key cable
23	0DU36KK001A//	AD		C	PWB holder
24	0DU09KK002A//	AB		C	Spacer
25	0DU09KK001A//	AB		C	Spacer (for screw)
26	0DUPAKK004A//	BH		E	Key PWB unit
27	0DU32KK005A//	AL		C	Panel(bottom plate)
29	0DU3A13006A//	AA		C	Screw (3×6)
37	PZETE6651RCZZ	AB		C	Insulation sheet (for slide switch)
38	PZETE6652RCZZ	AB		C	Insulation sheet (for mode switch)
39	0DU3B12016Z//	AA		C	Screw(with spacer) (M2×16)
40	LANGK7314RCZZ	AC		C	Clerk switch angle
41	QSW-Z6774RCZZ	AU		B	Switch
42	JKNBZ6786RCZZ	AE		C	Dummy key cover (1×1)
43	QCNW-7120RCZZ	AE		C	Earth wire (Keyboard→Base plate)
101	0DUW-P071801//	AG		C	Connector
102	0DUW-P900301//	AC		C	Connector
103	0DUW-P901201//	AF		C	Connector
104	0DUW-P900350//	AB		C	Connector
105	0DUW-P900201//	AC		C	Connector

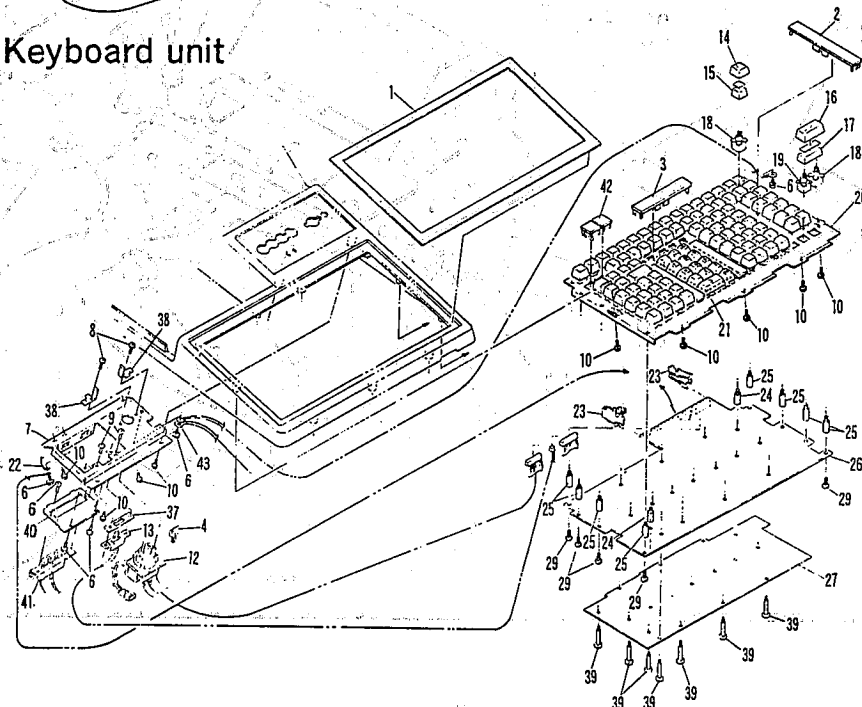
3 ER-3311 Keyboard unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
106	0DU74HC157B//	AG		B	IC
107	0DU74LS138B//	AF		B	IC
108	0DU1D1SS108A//	AB		B	Diode (1SS108)
109	0DU1D1S1588A//	AA		B	Diode (1S1588)
110	0DU1C25104C//	AB		C	Capacitor (25V 0.1μF)
111	0DU6R14738V//	AD		B	Block resistor (47KΩ×8 1/8W)
112	0DU1R24731A//	AA		C	Resistor (1/4W 47KΩ)
113	0DU1L10070A//	AA		C	Jumper wire
114	0DU14KK001A//	AD		C	Harness
115	0DU33MF16V0//	AD	N	C	Capacitor (16V 33μF)
116	0DUEST0BEA//	AA	N	C	Tube
201	0DU29KK3311//	AQ	N	C	Label
501	DUNTK8713RCZZ	BU	N	E	Keyboard unit(normal type)

2 ER-3310 Keyboard unit

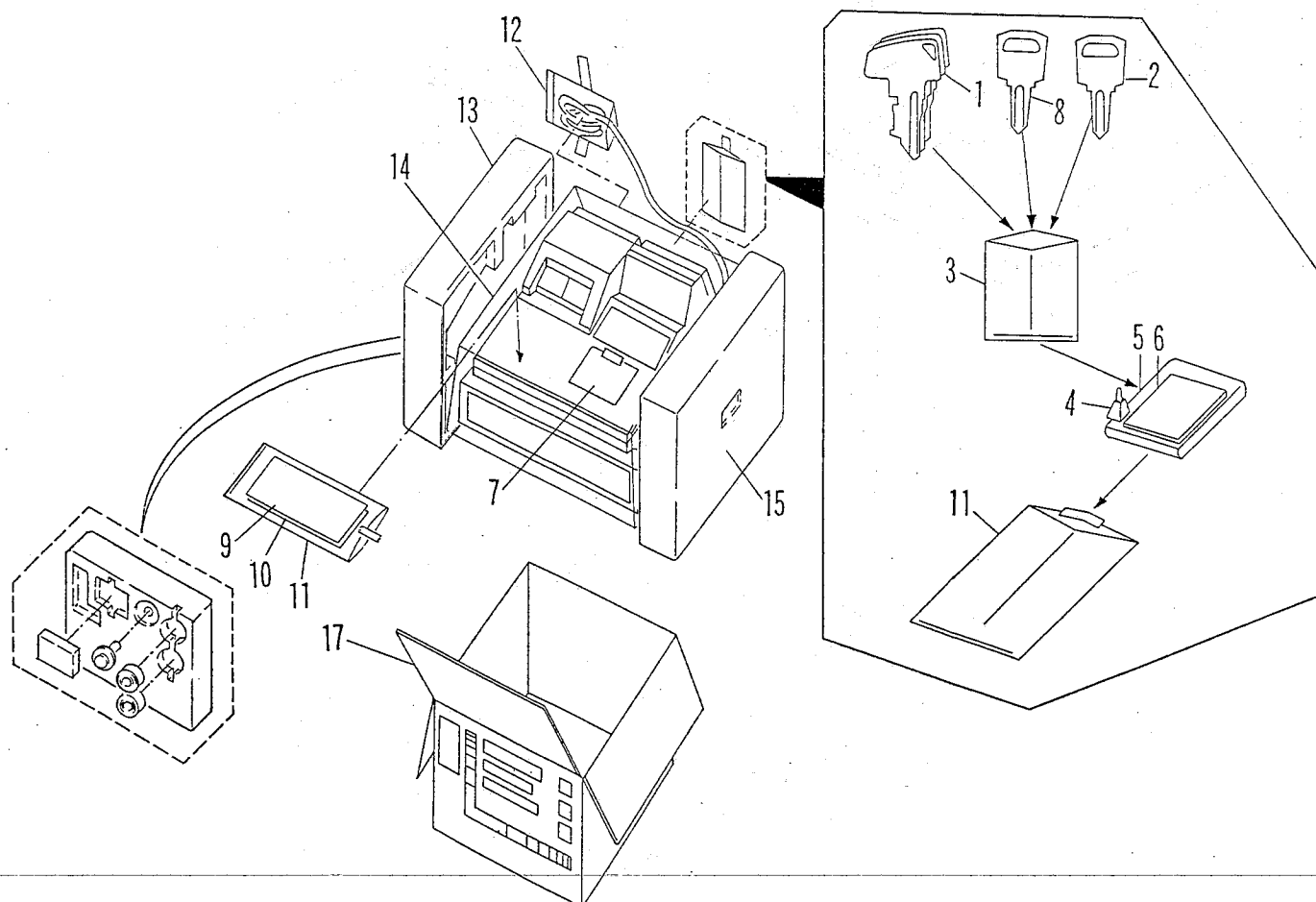


3 ER-3311 Keyboard unit



4 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LKGIM7110RCZZ	AG		B	Master key (MA)(2pcs)
	LKGIM7111RCZZ	AG		B	Operator key (OP)(2pcs)
	LKGIM7129RCZZ	AE		B	Sub master key (SM)(2pcs)
2	LKGIM7108RC01	AD		B	Key for printer cover
3	SSAKA0001SCZZ	AA		D	Vinyl bag (160×200)
4	UINK-1001CCZZ	AK		S	Replenishment ink (5cc)
5	GCOVD6871RCZZ	AP		D	Dust cover
6	TINSE7095RCZZ	AY	N	D	Instruction book (U.S.A)
	TINSK7102RCZZ	BK	N	D	Instruction book (Canada)
7	TCADH6653RCZZ	AB		D	Caution card (U.S.A)
	TCADH6654RCZZ	AB		D	Caution label (Canada)
8	OAGLKMD60A01	AH		B	Drawer key (IPC)
9	PSHEZ6700RCZZ	AD		C	Character sheet (Blank) (ER3310)
10	PSHEZ6698RCZZ	AC		C	Character sheet (Setting) (ER3310)
11	SSAKH3015CCZZ	AA		D	Vinyl bag (240×360mm)
12	SSAKA5004CCZZ	AA		D	Vinyl bag (for AC cord) (100×300mm)
13	SPAKA7579RCZZ	AP		D	Packing cushion (Left)
14	SSAKA2012KCZZ	AF		D	Vinyl bag (600×540×510)
15	SPAKA7578RCZZ	AP		D	Packing cushion (Right)
17	SPAKC7747RCZZ	AR	N	D	Packing case (ER3310-U.S.A)
	SPAKC7748RCZZ	AR	N	D	Packing case (ER3311-U.S.A)
	SPAKC7749RCZZ	AR	N	D	Packing case (ER3310-Canada)
	SPAKC7750RCZZ	AT	N	D	Packing case (ER3311-Canada)
101	UBNDA1008CCZZ	AA		C	AC cord band (120mm)



5 Drawer box unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	XBPSD30P10KS0	AB		C	Screw (3×10KS)
2	LX-WZ0052FCZZ	AA		C	Washer (SF-7750)
3	LHLDW4081CCZZ	AC		C	Cord holder
4	QCNW-7172RCZZ	AH		C	Connector with wire
5	GCABM6986RCZZ	BF		D	Drawer cabinet
6	NR0LP6643RCZZ	AE		C	Roller
7	PGUMM6659RCZZ	AB		C	Stopper rubber (Front)
8	XBPSD23P10000	AA		C	Screw (2.3×10)
9	QSW-M2128SCZZ	AG		B	Micro switch
10	PSHEZ6735RCZZ	AB		C	Insulator sheet
11	0AGQCW208MKSS	AB		C	Lead wire for microswitch
12	XWHS26-05075	AA		C	Washer (2.6)
13	PMAGE6631RCZZ	AQ		B	Plunger
14	DUNTM8517RCZZ	AN		C	Lock frame unit
15	XBPSD30P05K00	AA		C	Screw (3×5K)
16	MSPRT6695RCZZ	AB		C	Open spring
17	0AGLCS201MKSS	AH		C	Unit chassis
18	XBPSD40P06000	AA		C	Screw (4×6)
19	MSPRC6694RCZZ	AB		C	Bell spring
20	MLEVP6687RCZZ	AK		C	Bell hammer
21	XUPSD30P06000	AA		C	Screw (3×6)
22	LBRC-6654RCZZ	AK		C	Bracket (for 4B) (U.S.A)
23	MSPRK6698RCZZ	AB		C	Bill pressure spring
24	MLEV-6571RCN1	AD		C	Bill pressure lever
25	G1TAU6642RCZZ	AE		C	Bill separator (U.S.A)
26	XBPSD40P06K00	AA		C	Screw (4×6K)
27	0AGRAL201MKSS	AD		C	Bell
28	LBRC-6653RCZZ	AF		C	Bracket (for 1B) (U.S.A)
29	LX-NZ0070WRE0	AA		C	Nut
30	GLEGG6047RCZZ	AE		C	Rubber foot
31	MSPRC6693RCZZ	AD		C	Push out spring
32	LX-BZ6750RCZZ	AA		C	Screw
33	XNESD60-50000	AA		C	Nut
	XWSSD60-15000	AA		C	Washer
37	LCHSS6658RCZZ	AT		C	Bottom plate
38	GDRW-6665RCZZ	AZ		D	Drawer case
39	0AGMSK801MKSS	AE		C	Lock key spring
40	0AGDC60A-010S	AP		B	Drawer lock (body)
41	0AGLKMDC60A01	AH		B	Drawer key (1PC)
42	GCASP6641RCZZ	AV		C	Coin case (U.S.A)
43	LBNDJ5003BCZZ	AA		C	Band (SKB-1M)
45	MSPRK6629RCZZ	AC		C	Bill pressure lever R (Canada)
48	GCASP6643RCN1	AX		C	Coin case (Canada)
49	LBRC-6655RCZZ	AK		C	Bracket(for 4BA) (Canada)
50	LBRC-6659RCZZ	AK		C	Bracket(for 2BA) (Canada)
52	MLEV-6644RCZZ	AE		C	Bill pressure lever R (Canada)
53	MLEV-6645RCZZ	AG		C	Bill pressure lever L (Canada)
54	0AGGLG8022017	AB		C	Stopper rubber (K2017)
58	XCTSD40P06000	AA		C	Screw (4×6)
59	0AGXBD803315S	AA		C	Screw (3×15)
60	XBPSD30P08KS0	AA		C	Screw (3×8KS)
61	XBPSD40P08KS0	AA		C	Screw (4×8KS)
101	LHLDW2091SCZZ	AD		C	Cable holder (CKN-07)
501	CCASP6666RC01	AZ		E	Money case (6B/6C) (U.S.A)
502	CCASP6668RC01	BA	N	E	Money case (6B/15C) (Canada)
503	DUNT-8677RCZZ	AN		E	Spring unit(with bell)
504	CLOK-6657RC01	AX		E	Lock unit
	(Unit)				
901	GB0XD6948RCZZ	BT		E	Drawer box unit (U.S.A)
	GB0XD6952RCZZ	BT		E	Drawer box unit (Canada)

6 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LBNDJ0004UCZZ	AA		C	Cable band (TE10K)
2	PRDAF6641RCZZ	AK		C	Heat sink
3	QCNCW1057ACZZ	AB		C	Connector (Short socket)
4	QCNCM1060AC03	AB		B	Connector (Short pin)(3pin)
5	QCNCM1101CCZZ	AB		B	Connector (2pin)
6	QCNC-6768RC1H	AM		C	Connector (18pin)
7	QCNC-6786RC3J	AQ		C	Connector (30pin)
8	QCNCM6794RC0B	AC		B	Connector (2pin)
9	QCNCM6802RC0B	AC		B	Connector (2pin)
10	QCNCM6821RC0C	AC		B	Connector (3pin)
11	QCNCM6865RC0i	AC		C	Connector (9pin)
12	QCNCM6865RC2J	AD		C	Connector (20pin)

6 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
13	QCNCM6926RC1C	AC		C	Connector (13pin)
14	QCNCM6927RC0E	AD		C	Connector (5pin)
15	QCNW-2891RCZZ	AD		C	GND cable
16	QCNW-7113RCZZ	AP		C	Lead wire (Printer 1)
17	QCNW-7114RCZZ	AK		C	Printer connector (CN3)
18	QCNW-7123RCZZ	AD		C	GND wire 1
19	QCNW-7127RCZZ	AB		C	GND wire 5
20	QCNW-7128RCZZ	AC		C	Battery cable
21	QCNW-7213RCZZ	AB		C	GND jumper 1
22	QFS-B0301QCZZ	AE		A	Fuse (3.15A/125V)
23	QFS-B0331QCZZ	AE		A	Fuse (2A/125V)
24	QFS-A1037CCZZ	AC		A	Fuse (1.5A)(NRT mini)
25	QFSHA1002CCZZ	AB		C	Holder,fuse (MINI TYPE)
26	QLUGE0002WCZZ	AB		C	Terminal
27	QSOCCZ2042SC32	AE		C	IC socket (32pin)
28	QSOCCZ6428ACZZ	AE		C	IC socket (28pin)
29	RALMB6641RCZZ	AK		B	Alarm (TMB-05)
30	RC-CZ1084CCZZ	AB		C	Capacitor (MFC H06D300)
31	RC-EZ688MRC1J	AQ		C	Capacitor (63WV 6800 μ F)
32	RC-KZ1054CCN2	AB		C	Capacitor (RPE132-906)
33	RC-KZ1054CCZZ	AB		C	Capacitor (0.1 μ F)
34	RCiLC6632RCZZ	AQ		C	Coil
35	RCiLC6641RCZZ	AQ		C	Coil
36	RCRSP1018CCZZ	AL		B	Crystal (32768Hz)
37	RCRSZ5001SCZZ	AD		B	Crystal (8.0MHz)
38	RCRSP6635RCZZ	AD		B	Crystal (4.91Hz)
39	RMPTC4332QCKB	AC		B	Block resistor (3.3K Ω ×4 1/8W $\pm$ 10%)
40	RMPTC4432QCJB	AA		B	Block resistor (4.3K Ω ×4 1/8W $\pm$ 5%)
41	RMPTC5103QCKB	AC		B	Block resistor (10K Ω ×5 1/8W $\pm$ 10%)
42	RMPTC6103QCKB	AC		B	Block resistor (10K Ω ×6 1/8W $\pm$ 10%)
43	RMPTC7103QCKB	AD		B	Block resistor (10K Ω ×7 1/8W $\pm$ 10%)
44	RMPTC8103QCKB	AD		B	Block resistor (10K Ω ×8 1/8W $\pm$ 10%)
45	RTRNH6783RCZZ	AN		B	Converter transformer
46	UBATN6627RCZZ	AV		B	Battery
47	VCCCPU1HH200J	AA		C	Capacitor (50WV 20pF)
48	VCCCPA1HH270J	AA		C	Capacitor (50WV 27PF)
49	VCCCPU1HH300J	AA		C	Capacitor (50WV 30PF)
50	VCCCPA1HH330J	AA	N	C	Capacitor (50WV 33pF)
51	VCEAGA1HW225M	AA		C	Capacitor (50WV 2.2 μ F)
52	VCEAGA2AW106M	AB		C	Capacitor (100WV 10 μ F)
53	VCEAGA2AW226M	AB		C	Capacitor (100WV 22 μ F)
54	VCEAGU1CW106M	AA		C	Capacitor (16WV 10 μ F)
55	VCEAGU1CW108M	AD		C	Capacitor (16WV 1000 μ F)
56	VCEAGU1HW105M	AA		C	Capacitor (50WV 1.0 μ F)
57	VCEAGU1HW477M	AD		C	Capacitor (50WV 470 μ F)
58	VCEAGU1VW228M	AG		C	Capacitor (35WV 2200 μ F)
59	VCKYPU1HB101K	AA		C	Capacitor (50WV 100pF)
60	VCKYPU1HB102K	AA		C	Capacitor (50WV 1000pF)
61	VCKYPA1HB152K	AA		C	Capacitor (50WV 1500PF)
62	VCKYPA1HB331K	AA	N	C	Capacitor (50WV 330pF)
63	VCKYPA1HB391K	AA		C	Capacitor (50WV 390PF)
64	VCKYPU1HB561K	AA		C	Capacitor (50WV 560PF)
65	VCQYNA1HM103K	AA		C	Capacitor (50WV 0.010 μ F)
66	VCQYNU1HM104K	AB		C	Capacitor (50WV 0.1 μ F)
67	VCQYNU1HM473K	AB		C	Capacitor (50WV 0.047 μ F)
68	VCQYNU1HM683K	AB		C	Capacitor (50WV 0.068 μ F)
69	VCQYNU2AM103K	AA		C	Capacitor (100WV 0.010 μ F)
70	VCSAVA1CE685K	AD		C	Capacitor (16WV 6.8 μ F)
71	VHDDSS131HV-1	AA		B	Diode (DSS131HV)
72	VHDDSS133HV-1	AA		B	Diode (DSS133HV)
73	VHDRBV401F/-1	AF		B	Diode (RBV401F)
74	VHDK44///-4	AF		B	Diode (RK44)
75	VHD1SS82///-1	AB		B	Diode (1SS82)
76	VHD10DF1///-1	AD		B	Diode (10DF1)
77	VHERD33EB4/-1	AB		B	Zener diode (RD33EB4)
78	VHERD39EB3/-1	AC		B	Zener diode (RD39EB3)
79	VHERD4.3EL3-1	AB		B	Zener diode (RD4.3EL3)
80	VHERD6.2EB1-1	AB		B	Zener diode (RD6.2EB1)
81	VHiHD61J214F1	AW		B	IC (HD61J214F1)
82	VHiHD63A03/-1	BB		B	IC (HD63A03)
83	VHiH6305ZA79F	BD		B	IC (H6305ZA79F)
84	VHi63705RAA1D	BA		B	IC (63705RAA1D)
85	VHiIR3M03AV-1	AH		B	IC (IR9393)
86	VHiIR9393///-1	AE		B	IC (IR9393)
87	VHiLH5167P-55	AT		B	IC (LH5167P-55)
88	VHiLZ92A42/-1	AN		B	IC (LZ92A42)
89	VHiMC74HC00-1	AE		B	IC (MC74HC00)
90	VHiMC74HC04-1	AE		B	IC (MC74HC04)
91	VHiMC74HC32-1	AE		B	IC (TC74HC32PN)
92	VHiM51943BSL1	AF		B	IC (M51943BSL1)

6 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
92	VHiRP5C15//--1	AV		B	IC (RP5C15)
93	VHiSiB1034D-1	AG		B	IC (SiB1034D)
94	VHiSLA4061//--1	AP		B	IC (SLA4061)
95	VHiSLA4392//--1	AN		B	IC (SLA4392)
96	VHiSTR2124//--1	AR		B	IC (STR2124)
97	VHiTD62503P-1	AG		B	IC (TD62503P)
98	VHiT74LS14//--C	AG		B	IC (T74LS14)
99	VHiT74LS33//--C	AF		B	IC (T74LS33)
100	VHi16L8CRAT1A	AQ		B	IC (16L8CRAT1A)
101	VHi27101RAD1A	BE		B	IC (27101RAD1A)
102	VHi27512RAV1A	BC		B	IC (27512RAV1A)
103	VHi62256LFP15	BA	N	B	IC (62256LFP15)
104	VRD-RC2EY100J	AA		C	Resistor (1/4W 10Ω ±5%)
105	VRD-RC2EY101J	AA		C	Resistor (1/4W 100Ω ±5%)
106	VRD-RC2EY102J	AA		C	Resistor (1/4W 1.0KΩ ±5%)
107	VRD-RC2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)
108	VRD-RC2EY104J	AA		C	Resistor (1/4W 100KΩ ±5%)
109	VRD-RC2EY122J	AA		C	Resistor (1/4W 1.2KΩ ±5%)
110	VRD-RC2EY132G	AA		C	Resistor (1/4W 1.3KΩ ±2%)
111	VRD-RC2EY181J	AA		C	Resistor (1/4W 180Ω ±5%)
112	VRD-RC2EY182G	AA		C	Resistor (1/4W 1.8KΩ ±2%)
113	VRD-RC2EY203G	AA		C	Resistor (1/4W 20KΩ ±2%)
114	VRD-RC2EY220J	AA		C	Resistor (1/4W 22Ω ±5%)
115	VRD-RC2EY221J	AA		C	Resistor (1/4W 220Ω ±5%)
116	VRD-RC2EY222J	AA		C	Resistor (1/4W 2.2KΩ ±5%)
117	VRD-RC2EY223J	AA		C	Resistor (1/4W 22KΩ ±5%)
118	VRD-RC2EY272J	AA		C	Resistor (1/4W 2.7KΩ ±5%)
119	VRD-RC2EY273J	AA		C	Resistor (1/4W 27KΩ ±5%)
120	VRD-RC2EY331J	AA		C	Resistor (1/4W 330Ω ±5%)
121	VRD-RC2EY333J	AA		C	Resistor (1/4W 33KΩ ±5%)
122	VRD-RC2EY334J	AA		C	Resistor (1/4W 330KΩ ±5%)
123	VRD-RC2EY392J	AA		C	Resistor (1/4W 3.9KΩ ±5%)
124	VRD-RC2EY470J	AA		C	Resistor (1/4W 47Ω ±5%)
125	VRD-RC2EY472G	AA		C	Resistor (1/4W 4.7KΩ ±2%)
126	VRD-RC2EY472J	AA		C	Resistor (1/4W 4.7KΩ ±5%)
127	VRD-RC2EY473J	AA		C	Resistor (1/4W 47KΩ ±5%)
128	VRD-RC2EY561J	AA		C	Resistor (1/4W 560Ω ±5%)
129	VRD-RC2EY562J	AA		C	Resistor (1/4W 5.6KΩ ±5%)
130	VRD-RC2EY563J	AA		C	Resistor (1/4W 56KΩ ±5%)
131	VRD-RC2EY682J	AA		C	Resistor (1/4W 6.8KΩ ±5%)
132	VRD-RC2EY822G	AA		C	Resistor (1/4W 8.2KΩ ±2%)
133	VRD-RC2EY912G	AA		C	Resistor (1/4W 9.1KΩ ±2%)
134	VRNRC2EK1201F	AA		C	Resistor (1/4W 200Ω ±1%)
135	VRNRC2EK3601F	AA		C	Resistor (1/4W 3.6KΩ ±5%)
136	VRS-HT3AAR68J	AA		C	Resistor (1W 0.68Ω ±5%)
137	VRS-HT3AA131J	AA		C	Resistor (1W 130Ω ±5%)
138	VRS-ST3ABR10J	AA		C	Resistor (1W 0.10Ω ±5%)
139	VSJA101-///--1	AB		B	Transistor (JA101)
140	VSJC501-///--1	AB		B	Transistor (JC501)
141	VS2SA673-///--1	AD		B	Transistor (2SA673)
142	VS2SC1472K//--1	AE		B	Transistor (2SC1472K)
143	VS2SC4153-///--1	AG		B	Transistor (2SC4153)
144	VS2SD1769-///--1	AE		B	Transistor (2SD1195)
145	VS2SD667-///--1	AD		B	Transistor (2SD667)
146	XBPSD30P08KS0	AA		C	Screw (3×8KS)
147	XBPSD30P08K00	AA		C	Screw (3×8K)
148	XBPSD30P10KS0	AB		C	Screw (3×10KS)
149	XBPSD30P12KS0	AA		C	Screw (3×12KS)
150	XBPSD30P14KS0	AA		C	Screw (3×14KS)
151	XNESD30-24000	AA		C	Nut (3NS)
	(Unit)				
901	CPWBF7102RC01	CN		E	Main PWB unit

7 Display PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LBNDJ0004UCZZ	AA		C	Cable band (TE10K)
2	PSPAG6685RCZZ	AA		C	Spacer for display tube
3	QCNCM6926RC0H	AB		C	Connector (8pin)
4	QCNCM6926RC1C	AC		C	Connector (13pin)
5	QCNCW-7109RCZZ	AN		C	Connector (Main→Display)
6	QCNCW-7112RCZZ	AP		C	Key cable
7	QCNCW-7124RCZZ	AB		C	GND wire 2 (To switch angle)
8	QCNCW-7126RCZZ	AC		C	GND wire 4
9	RC-CZ1084CCZZ	AB		C	Capacitor (MFC H06D300)
10	RCSRSP0006MCZZ	AD		B	Crystal (4MHz)

7 Display PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
11	RMPTCA104QCJB	AC		B	Block resistor (100K Ω ×11 1/8W $\pm$ 5%)
12	RMPTCB104QCJB	AD		B	Block resistor (100K Ω ×12 1/8W $\pm$ 5%)
13	RMPTC4104QCJB	AC		B	Block resistor (100K Ω ×4 1/8W $\pm$ 5%)
14	RMPTC8104QCJB	AC		B	Block resistor (100K Ω ×8 1/8W $\pm$ 5%)
15	VCCCPU1HH330J	AB		C	Capacitor (50WV 33pF)
16	VCEAGA1CW106M	AA		C	Capacitor (16WV 10 μ F)
17	VCKYPU1HB331K	AA		C	Capacitor (50WV 330pF)
18	VCKYPU1HB561K	AA		C	Capacitor (50WV 560pF)
19	VCSAVA1CE226M	AD		C	Capacitor (16WV 22 μ F)
20	VHEHZ9C1///-1	AB		B	Zener diode (HZ9C1)
21	VH1HD4042FH27	AX		B	IC (HD4042FH27)
22	VH1IR2C12N/-1	AM		B	IC (IR2C12N)
23	VH1Li2047P/-1	AU		B	IC (Li2047P)
24	VRD-RC2EY105J	AA		C	Resistor (1/4W 1.0M Ω $\pm$ 5%)
25	VRD-RC2EY4R7J	AA		C	Resistor (1/4W 4.7 Ω $\pm$ 5%)
26	VRS-HT3AA272J	AA		C	Resistor (1W 2.7K Ω $\pm$ 5%)
27	VVK112LT02G-1	BK		B	Display tube
	(Unit)				
901	CPWBF7066RC01	BW		E	Display PWB unit

8 Customer display PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LBNDJ0004UCZZ	AA		C	Cable band (TE10K)
2	QCNW-7110RCZZ	AM		C	Pop-up cable 1
3	QCNW-7111RCZZ	AK		C	Pop-up cable 2
4	VVDH09LT-03ZK	AX		B	Display tube
	(Unit)				
901	CPWBF7067RC01	BA		E	Customer display PWB unit

9 Articles of consumptions

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DPAPR1006CSZZ	AR		S	Roll paper (5rolls/pack)
2	PRBN-2320RCZZ	AX		S	Ribbon cassette
3	UINK-1001CCZZ	AK		S	Replenishment ink (5cc)

10 Service options

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DKIT-8226RCZZ			E	Journal near end sensor kit
2	DKIT-8227RCZZ			E	Validation sensor kit
3	DKIT-3337RCZZ			E	Water proof cover kit
4	GCOVB6872RCZZ	AW		D	Water proof switch cover (for stand cashier key)
5	LKGIM7126RCZZ	AK		B	Water proof operation key (OP)(for mode switch)
6	GCOVB6873RCZZ	AY		D	Water proof switch cover (for barrel cashier key)
7	GCOVB6925RCZZ	AX	N	D	Character key cover

11 AC CORD

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
△ 1	QACCCJ1413QCZZ	AG		B	AC cord Japan, RA7, RA8, RA9, RB6, RB7, RC5, SA, SC, SD, SJ
△ 1	QACCA3441QCZZ	AL		B	AC cord SBL, SBS, SB
△ 2	QACCD8411QCZZ	AN		B	AC cord U. S. A, Canada, Japan (Okinawa), Guam
△ 3	QACCE1422QCZZ	AM		B	AC cord RA1, RA2, RA4, RB1, RB3, RB5, RB9, RC4, SG, TQ, TR, TS AC cord Yugoslavia
△ 4	QPLGA4501CCZZ	AK		B	Plug SE
△ 4	QCNW-6629RCZZ	AN		B	AC cord SE
△ 5	QPLGA0018WRE0	AN		B	Plug SH, RA5
△ 5	QCNW-6629RCZZ	AN		B	AC cord SH, RA5
△ 5	PHOG-1023CCZZ	AB		B	Bushing for AC cord SH, RA5
△ 6	QACCL7421QCZZ	AS		B	AC cord KA, SL
△ 6	QPLGA0004QCZZ	AP		B	Plug RC2, RC3
△ 6	QPLGA0006QCZZ	AN		B	Plug KB
△ 7	QPLGA6626CCZZ	AN		B	Plug RB2, RB8, RC1, SM, SMT
△ 7	QCNW-7212RCZZ	AH		B	AC cord KB
△ 7	QCNW-6629RCZZ	AN		B	AC cord RB2, RB8, RC1, RC2, RC3, SM, SMT
△ 8	QACCZ6421QCZZ	AU		B	AC cord RA3
△ 8	PHOG-4581CCZZ	AB		B	Bushing for AC cord RA3
△ 9	QCNW-6629RCZZ	AN		B	AC cord RB4 (AC cord only. The plug is not included.)

Note : Instead of AC cords QACCC3421QCZZ/QACCK1008CCZZ, the AC cord QACCE1422QCZZ(No.3) is supplied as service spare part.

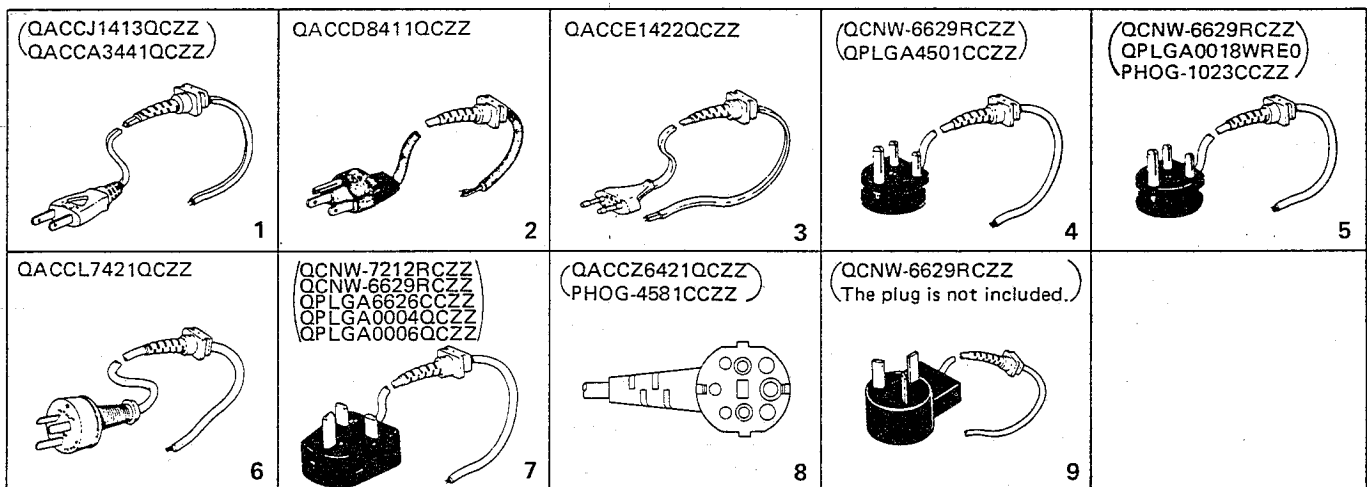


Table of destinations

SELECTION CODE	COUNTRIES
U	U.S.A., Guam
A	Canada
KA	Australia
KB	U. Kingdom, Scotland
SA	Korea
SB	Saudi Arabia
SBL	Saudi Arabia (Drawer TYPE:Large)
SBS	Saudi Arabia (Drawer TYPE:Small)
SC	Formosa
SD	R. of Colombia, Costa Rica, R. of Guatemala, Honduras, Venezuela, Nicaragua, El Salvador, Mexico, Cuba
SE	Hong Kong
* SG	Kuwait, Lebanon, Bahrain, Thailand, Indonesia (Drawer coin case 4B/3C), Tahiti, Pakistan, Iran, Syria, Turkey, Jordan, Iraq, Sultanate of Oman, Sudan, Egypt (U.A.R.), Re-union
SH	South Africa
SJ	Philippines
SL	New Zealand
SM	Kenya, Malta
SMT	Nigeria, UAE
TQ	SEEG territory other than Germany (Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, Hungary, Iceland, Italy, Norway, France, Switzerland, Portugal, Netherlands, Poland, Romania, Sweden)
TR	Spain
TS	Germany

RA1	Tunisia, West Africa, Ivory coast, Algeria, Cameroon, Chad, Dahomey, Gabon, Congo, Togo, Senegal, Niger, Burkina Faso, C. Africa	RB1	F. R. of Brazil	RC1	Malaysia (Europe version)
RA2	Argentine Republic, R. of Paraguay	RB2	Barbados (220V) REFER TO RB7	RC2	Singapore (Europe version)
RA3	Greece	* RB3	Indonesia (Drawer coin case 6B/5C)	RC3	Singapore (USA version)
RA4	R. of Chile, R. of Uruguay	RB4		RC4	Thailand (USA version)
RA5	Sri Lanka	RB5	Cyprus	RC5	Dominican Republic
RA6		RB6	R. of Panama	RC6	
RA7	Curacao, Netherlands Antilles	RB7	Barbados (120V) REFER TO RB2	RC7	
RA8	Liberia	RB8	Malaysia (USA-version)	RC8	
RA9	R. of Peru	RB9	China	RC9	

Parts marked with "△" is 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.

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PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK
[C]				
CCASP6666RC01	5- 501	AZ		E
CCASP6668RC01	5- 502	BA	N	E
CLOK-6657RC01	5- 504	AX		E
CPWBF7066RC01	1- 43	BW		E
"	7- 901	BW		E
CPWBF7067RC01	1- 47	BA		E
"	8- 901	BA		E
CPWBF7102RC01	1- 22	CN		E
"	6- 901	CN		E
[D]				
DKiT-3337RCZZ	10- 3			E
DKiT-8226RCZZ	10- 1			E
DKiT-8227RCZZ	10- 2			E
DPAPR1006CSZZ	9- 1	AR		S
DUNT-8677RCZZ	5- 503	AN		E
DUNTK8196RCZZ	2- 501	BK		E
DUNTK8713RCZZ	3- 501	BU	N	E
DUNTM8517RCZZ	5- 14	AN		C
[G]				
GBÖXD6948RCZZ	5- 901	BT		E
GBÖXD6952RCZZ	5- 901	BT		E
GCABA7037RCZZ	1- 25	AY		D
GCABB6917RCZZ	1- 1	AT		D
GCABB6918RCZZ	1- 46	AH		D
GCABM6986RCZZ	5- 5	BF		D
GCASP6641RCZZ	5- 42	AV		C
GCASP6643RCN1	5- 48	AX		C
GCÖVB6872RCZZ	10- 4	AW		D
GCÖVB6873RCZZ	10- 6	AY		D
GCÖVB6925RCZZ	10- 7	AX	N	D
GCÖVD6871RCZZ	4- 5	AP		D
GCÖVH6878RCZZ	1- 39	AR		D
GDRW-6665RCZZ	5- 38	AZ		D
GFTAF6709RCZZ	1- 24	AC	N	D
GFTAS6710RCZZ	1- 27	AB		D
GiTAU6642RCZZ	5- 25	AE		C
GiTAU6723RCZZ	1- 11	AQ		D
GiTAU6735RCZZ	1- 26	AM		D
GLEGG6047RCZZ	5- 30	AE		C
[H]				
HBDGD6845RCZZ	1- 40	AC	N	D
HBDGD6846RCZZ	1- 40	AC	N	D
HDECE6743RCZZ	1- 6	AH		D
HDECE6744RCZZ	1- 7	AD		D
HDECE6774RCZZ	3- 1	AW		D
HPNLC6746RCZZ	1- 5	AG		D
HPNLC6747RCZZ	1- 16	AG		C
HPNLC6753RCZZ	1- 5	AL		D
[J]				
JKNBZ6786RCZZ	3- 42	AE		C
[K]				
Ki-ÖB6706RCZZ	1- 32	CA		E
[L]				
LANGK7227RCZZ	1- 42	AC		C
LANGK7278RCZZ	1- 50	AD		C
LANGK7303RCZZ	1- 17	AG		C
LANGK7314RCZZ	2- 20	AC		C
"	3- 40	AC		C
LANGT7246RCZZ	2- 19	AG		C
"	3- 7	AG		C
LBNDJ0004UCZZ	1- 65	AA		C
"	6- 1	AA		C
"	7- 1	AA		C
"	8- 1	AA		C
LBNDJ5003BCZZ	5- 43	AA		C
LBRC-6653RCZZ	5- 28	AF		C
LBRC-6654RCZZ	5- 22	AK		C
LBRC-6655RCZZ	5- 49	AK		C
LBRC-6659RCZZ	5- 50	AK		C
LCHSS6658RCZZ	5- 37	AT		C
LHLDW0006SCZZ	1- 71	AB		C
LHLDW2091SCZZ	5- 101	AD		C
LHLDW4081CCZZ	5- 3	AC		C
LHLDW5034BCZZ	1- 4	AB		C
LKGIM7108RC01	1- 52	AD		B
"	4- 2	AD		B
LKGIM7110RCZZ	2- 4	AG		B
"	3- 4	AG		B
"	4- 1	AG		B

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK
LKGIM7111RCZZ	2- 4	AG		B
"	3- 4	AG		B
"	4- 1	AG		B
LKGIM7126RCZZ	10- 5	AK		B
LKGIM7129RCZZ	2- 4	AE		B
"	3- 4	AE		B
"	4- 1	AE		B
LKGIM7107RC01	1- 53	AK		B
LKGIM7256RCZZ	2- 21	AP		B
"	3- 12	AP		B
LX-BZ1007CCZZ	1- 31	AB		C
LX-BZ6750RCZZ	5- 32	AA		C
LX-NZ0070WRE0	5- 29	AA		C
LX-WZ0052FCZZ	5- 2	AA		C
[M]				
MLEV-6571RCN1	5- 24	AD		C
MLEV-6644RCZZ	5- 52	AE		C
MLEV-6645RCZZ	5- 53	AG		C
MLEVP6687RCZZ	5- 20	AK		C
MSPRC6693RCZZ	5- 31	AD		C
MSPRC6694RCZZ	5- 19	AB		C
MSPRK6629RCZZ	5- 45	AC		C
MSPRK6698RCZZ	5- 23	AB		C
MSPRT6689RC01	1- 54	AC		C
MSPRT6695RCZZ	5- 16	AB		C
[N]				
NRÖLP6643RCZZ	5- 6	AE		C
[P]				
PCLi-0004UCZZ	1- 72	AC		C
PCÖVW6632RCZZ	1- 73	AC		C
PCUS-4101CCZZ	1- 30	AB		C
PCUT-1027CCZZ	1- 38	AC		C
PfILW6714RCZZ	1- 37	AD		D
PfILW6825RCZZ	1- 48	AK		D
PfILW6826RCZZ	1- 3	AM		D
PGUMM6659RCZZ	5- 7	AB		C
PMAGE6631RCZZ	5- 13	AQ		B
PRBN-2320RCZZ	1- 59	AX		S
"	9- 2	AX		S
PRDAF6641RCZZ	6- 2	AK		C
PSHEZ6688RCZZ	2- 3	AQ		C
PSHEZ6698RCZZ	4- 10	AC		C
PSHEZ6700RCZZ	4- 9	AD		C
PSHEZ6720RCZZ	2- 2	AG		C
PSHEZ6729RCZZ	2- 1	AW		C
PSHEZ6735RCZZ	5- 10	AB		C
PSPAG6685RCZZ	7- 2	AA		C
PSM-6658RC01	1- 33	AR		C
PZETE6651RCZZ	2- 27	AB		C
"	3- 37	AB		C
PZETE6652RCZZ	2- 28	AB		C
"	3- 38	AB		C
[Q]				
QCNC-6768RC1H	6- 6	AM		C
QCNC-6786RC3J	6- 7	AQ		C
QCNCM1060AC03	6- 4	AB		B
QCNCM1101CCZZ	6- 5	AB		B
QCNCM6794RC0B	6- 8	AC		B
QCNCM6802RC0B	6- 9	AC		B
QCNCM6821RC0C	6- 10	AC		B
QCNCM6865RC0i	6- 11	AC		C
QCNCM6865RC2J	6- 12	AD		C
QCNCM6926RC0H	7- 3	AB		C
QCNCM6926RC1C	6- 13	AC		C
"	7- 4	AC		C
QCNCM6927RC0E	6- 14	AD		C
QCNCW1057ACZZ	6- 3	AB		C
QCNCW-2891RCZZ	6- 15	AD		C
QCNCW-7039RCZZ	1- 23	AB		C
QCNCW-7109RCZZ	1- 64	AN		C
"	7- 5	AN		C
QCNCW-7110RCZZ	1- 44	AM		C
"	8- 2	AM		C
QCNCW-7111RCZZ	1- 45	AK		C
"	8- 3	AK		C
QCNCW-7112RCZZ	1- 41	AP		C
"	3- 22	AP		C
"	7- 6	AP		C
QCNCW-7113RCZZ	1- 62	AP		C
"	6- 16	AP		C

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
QCNW-7114RCZZ	1- 63	AK		C	
"	6- 17	AK		C	
QCNW-7115RCZZ	1- 13	AN		C	
QCNW-7116RCZZ	1- 12	AE		C	
QCNW-7117RCZZ	1- 58	AE		C	
QCNW-7120RCZZ	1- 55	AE		C	
"	2- 24	AE		C	
"	3- 43	AE		C	
QCNW-7121RCZZ	1- 29	AD		C	
QCNW-7122RCZZ	1- 49	AD		C	
QCNW-7123RCZZ	6- 18	AD		C	
QCNW-7124RCZZ	2- 8	AB		C	
"	7- 7	AB		C	
QCNW-7125RCZZ	1- 19	AD		C	
QCNW-7126RCZZ	7- 8	AC		C	
QCNW-7127RCZZ	6- 19	AB		C	
QCNW-7128RCZZ	1- 66	AC		C	
"	6- 20	AC		C	
QCNW-7172RCZZ	5- 4	AH		C	
QCNW-7213RCZZ	6- 21	AB		C	
QFS-A1037CCZZ	6- 24	AC		A	
QFS-B0301QCZZ	6- 22	AE		A	
QFS-B0331QCZZ	6- 23	AE		A	
QFSHA1002CCZZ	6- 25	AB		C	
QLUGE0002WCZZ	6- 26	AB		C	
QS0CZ2042SC32	6- 27	AE		C	
QS0CZ6428ACZZ	6- 28	AE		C	
QSW-M2128SCZZ	5- 9	AG		B	
QSW-Z6773RCZZ	2- 13	AN		B	
"	3- 13	AN		B	
QSW-Z6774RCZZ	2- 11	AU		B	
"	3- 41	AU		B	
QTANP0004HCZZ	1- 60	AB		C	
QTANP1094CCZZ	1- 61	AA		C	
[R]					
RALMB6641RCZZ	6- 29	AK		B	
RC-CZ1084CCZZ	6- 30	AB		C	
"	7- 9	AB		C	
RC-EZ688MRC1J	6- 31	AQ		C	
RC-KZ1054CCN2	6- 32	AB		C	
RC-KZ1054CCZZ	6- 33	AB		C	
RCiLC6632RCZZ	6- 34	AQ		C	
RCiLC6641RCZZ	6- 35	AQ		C	
RCORF5003SCZZ	1- 69	AK		C	
RCORF6627RCZZ	1- 57	AK		C	
RCRSP0006MCZZ	7- 10	AD		B	
RCRSP1018CCZZ	6- 36	AL		B	
RCRSP6635RCZZ	6- 38	AD		B	
RCRSZ5001SCZZ	6- 37	AD		B	
RFiLN6001RCZZ	1- 10	AT		C	
RMPTCA104QCJB	7- 11	AC		B	
RMPTCB104QCJB	7- 12	AD		B	
RMPTC4104QCJB	7- 13	AC		B	
RMPTC4332QCKB	6- 39	AC		B	
RMPTC4432QCKB	6- 40	AA		B	
RMPTC5103QCKB	6- 41	AC		B	
RMPTC6103QCKB	6- 42	AC		B	
RMPTC7103QCKB	6- 43	AD		B	
RMPTC8103QCKB	6- 44	AD		B	
RMPTC8104QCJB	7- 14	AC		B	
RTRNH6783RCZZ	6- 45	AN		B	
RTRNP6782RCZZ	1- 9	AZ		B	
[S]					
SPAKA7578RCZZ	4- 15	AP		D	
SPAKA7579RCZZ	4- 13	AP		D	
SPAKC7747RCZZ	4- 17	AR	N	D	
SPAKC7748RCZZ	4- 17	AR	N	D	
SPAKC7749RCZZ	4- 17	AR	N	D	
SPAKC7750RCZZ	4- 17	AT	N	D	
SSAKA0001SCZZ	4- 3	AA		D	
SSAKA2012KCZZ	4- 14	AF		D	
SSAKA5004CCZZ	4- 12	AA		D	
SSAKH3015CCZZ	4- 11	AA		D	
[T]					
TCADH6653RCZZ	4- 7	AB		D	
TCADH6654RCZZ	4- 7	AB		D	
TiNSE7095RCZZ	4- 6	AY	N	D	
TiNSK7102RCZZ	4- 6	BK	N	D	
[U]					
UBATN6627RCZZ	1- 67	AV		B	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
UBATN6627RCZZ	6- 46	AV		B	
UBNDA1008CCZZ	4- 101	AA		C	
UiNK-1001CCZZ	4- 4	AK		S	
"	9- 3	AK		S	
[V]					
VCCCPA1HH270J	6- 48	AA		C	
VCCCPA1HH330J	6- 50	AA	N	C	
VCCCPU1HH200J	6- 47	AA		C	
VCCCPU1HH300J	6- 49	AA		C	
VCCCPU1HH330J	7- 15	AB		C	
VCEAGA1CW106M	7- 16	AA		C	
VCEAGA1HW225M	6- 51	AA		C	
VCEAGA2AW106M	6- 52	AB		C	
VCEAGA2AW226M	6- 53	AB		C	
VCEAGU1CW106M	6- 54	AA		C	
VCEAGU1CW108M	6- 55	AD		C	
VCEAGU1HW105M	6- 56	AA		C	
VCEAGU1HW477M	6- 57	AD		C	
VCEAGU1VW228M	6- 58	AG		C	
VCKYPA1HB152K	6- 61	AA		C	
VCKYPA1HB331K	6- 62	AA	N	C	
VCKYPA1HB391K	6- 63	AA		C	
VCKYPU1HB101K	6- 59	AA		C	
VCKYPU1HB102K	6- 60	AA		C	
VCKYPU1HB331K	7- 17	AA		C	
VCKYPU1HB561K	6- 64	AA		C	
"	7- 18	AA		C	
VCQYNA1HM103K	6- 65	AA		C	
VCQYNU1HM104K	6- 66	AB		C	
VCQYNU1HM473K	6- 67	AB		C	
VCQYNU1HM683K	6- 68	AB		C	
VCQYNU2AM103K	6- 69	AA		C	
VCSAVA1CE226M	7- 19	AD		C	
VCSAVA1CE685K	6- 70	AD		C	
VHDDSS131HV-1	6- 71	AA		B	
VHDDSS133HV-1	6- 72	AA		B	
VHDBRV401F/-1	6- 73	AF		B	
VHDK44///-4	6- 74	AF		B	
VHD1SS82///-1	6- 75	AB		B	
VHD10DF1///-1	6- 76	AD		B	
VHEHZ9C1///-1	7- 20	AB		B	
VHERD33EB4/-1	6- 77	AB		B	
VHERD39EB3/-1	6- 78	AC		B	
VHERD4.3EL3-1	6- 79	AB		B	
VHERD6.2EB1-1	6- 80	AB		B	
VHiHD4042FH27	7- 21	AX		B	
VHiHD61J214F1	6- 81	AW		B	
VHiHD63A03/-1	6- 82	BB		B	
VHiH6305ZA79F	6- 83	BD		B	
VHiIR2C12N/-1	7- 22	AM		B	
VHiIR3M03AV-1	6- 84	AH		B	
VHiIR9393///-1	6- 85	AE		B	
VHiLH5167P-55	6- 86	AT		B	
VHiLi2047P/-1	7- 23	AU		B	
VHiLZ92A42/-1	6- 87	AN		B	
VHiMC74HC00-1	6- 88	AE		B	
VHiMC74HC04-1	6- 89	AE		B	
VHiMC74HC32-1	6- 90	AE		B	
VHiM51943BSL1	6- 91	AF		B	
VHiRP5C15///-1	6- 92	AV		B	
VHiSiB1034D-1	6- 93	AG		B	
VHiSLA4061/-1	6- 94	AP		B	
VHiSLA4392/-1	6- 95	AN		B	
VHiSTR2124/-1	6- 96	AR		B	
VHiTD62503P-1	6- 97	AG		B	
VHiT74LS14/-C	6- 98	AG		B	
VHiT74LS33/-C	6- 99	AF		B	
VHi16L8CRAT1A	6- 100	AQ		B	
VHi27101RAD1A	6- 101	BE		B	
VHi27512RAV1A	6- 102	BC		B	
VHi62256LFP15	6- 103	BA	N	B	
VHi63705RAA1D	6- 83	BA		B	
VRD-RC2EY100J	6- 104	AA		C	
VRD-RC2EY101J	6- 105	AA		C	
VRD-RC2EY102J	6- 106	AA		C	
VRD-RC2EY103J	6- 107	AA		C	
VRD-RC2EY104J	6- 108	AA		C	
VRD-RC2EY105J	7- 24	AA		C	
VRD-RC2EY122J	6- 109	AA		C	
VRD-RC2EY132G	6- 110	AA		C	

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PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK
VRD-RC2EY181J	6- 111	AA		C
VRD-RC2EY182G	6- 112	AA		C
VRD-RC2EY203G	6- 113	AA		C
VRD-RC2EY220J	6- 114	AA		C
VRD-RC2EY221J	6- 115	AA		C
VRD-RC2EY222J	6- 116	AA		C
VRD-RC2EY223J	6- 117	AA		C
VRD-RC2EY272J	6- 118	AA		C
VRD-RC2EY273J	6- 119	AA		C
VRD-RC2EY331J	6- 120	AA		C
VRD-RC2EY333J	6- 121	AA		C
VRD-RC2EY334J	6- 122	AA		C
VRD-RC2EY392J	6- 123	AA		C
VRD-RC2EY4R7J	7- 25	AA		C
VRD-RC2EY470J	6- 124	AA		C
VRD-RC2EY472G	6- 125	AA		C
VRD-RC2EY472J	6- 126	AA		C
VRD-RC2EY473J	6- 127	AA		C
VRD-RC2EY561J	6- 128	AA		C
VRD-RC2EY562J	6- 129	AA		C
VRD-RC2EY563J	6- 130	AA		C
VRD-RC2EY682J	6- 131	AA		C
VRD-RC2EY822G	6- 132	AA		C
VRD-RC2EY912G	6- 133	AA		C
VRNRC2EK1201F	6- 134	AA		C
VRNRC2EK3601F	6- 135	AA		C
VRS-HT3AAR68J	6- 136	AA		C
VRS-HT3AA131J	6- 137	AA		C
VRS-HT3AA272J	7- 26	AA		C
VRS-ST3ABR10J	6- 138	AA		C
VSJA101-///-1	6- 139	AB		B
VSJC501-///-1	6- 140	AB		B
VS2SA673-///-1	6- 141	AD		B
VS2SC1472K/-1	6- 142	AE		B
VS2SC4153-/-1	6- 143	AG		B
VS2SD1769-/-1	6- 144	AE		B
VS2SD667-///-1	6- 145	AD		B
VVDH09LT-03ZK	8- 4	AX		B
VVK112LT02G-1	7- 27	BK		B
【 X 】				
XBBSC30P10000	1- 2	AA		C
XBPBZ40P06K00	1- 20	AA		C
XBPSD20P04000	2- 9	AA		C
//	3- 9	AA		C
XBPSD23P10000	5- 8	AA		C
XBPSD30P04K00	1- 51	AA		C
XBPSD30P05K00	5- 15	AA		C
XBPSD30P06KS0	1- 18	AA		C
//	2- 6	AA		C
//	3- 6	AA		C
XBPSD30P08KS0	5- 60	AA		C
//	6- 146	AA		C
XBPSD30P08K00	6- 147	AA		C
XBPSD30P10KS0	1- 68	AB		C
//	5- 1	AB		C
//	6- 148	AB		C
XBPSD30P12KS0	6- 149	AA		C
XBPSD30P14KS0	6- 150	AA		C
XBPSD40P06K00	1- 21	AA		C
//	5- 26	AA		C
XBPSD40P06000	5- 18	AA		C
XBPSD40P08KS0	1- 8	AA		C
//	5- 61	AA		C
XBSSD30P06000	2- 26	AA		C
//	3- 10	AA		C
XCTSD40P06000	5- 58	AA		C
XNESD30-24000	1- 15	AA		C
//	6- 151	AA		C
XNESD60-50000	5- 33	AA		C
XUBSD30P06000	1- 56	AA		C
//	2- 10	AA		C
XUBSD30P08000	1- 14	AA		C
//	2- 17	AA		C
XUPSD20P04000	1- 35	AA		C
XUPSD30P06000	5- 21	AA		C
XUPSD30P12000	1- 70	AA		C
XUSSD30P06000	3- 8	AA		C
XWHSD20-04060	1- 36	AA		C
XWHSD26-05075	5- 12	AA		C
XWSSD60-15000	5- 33	AA		C

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