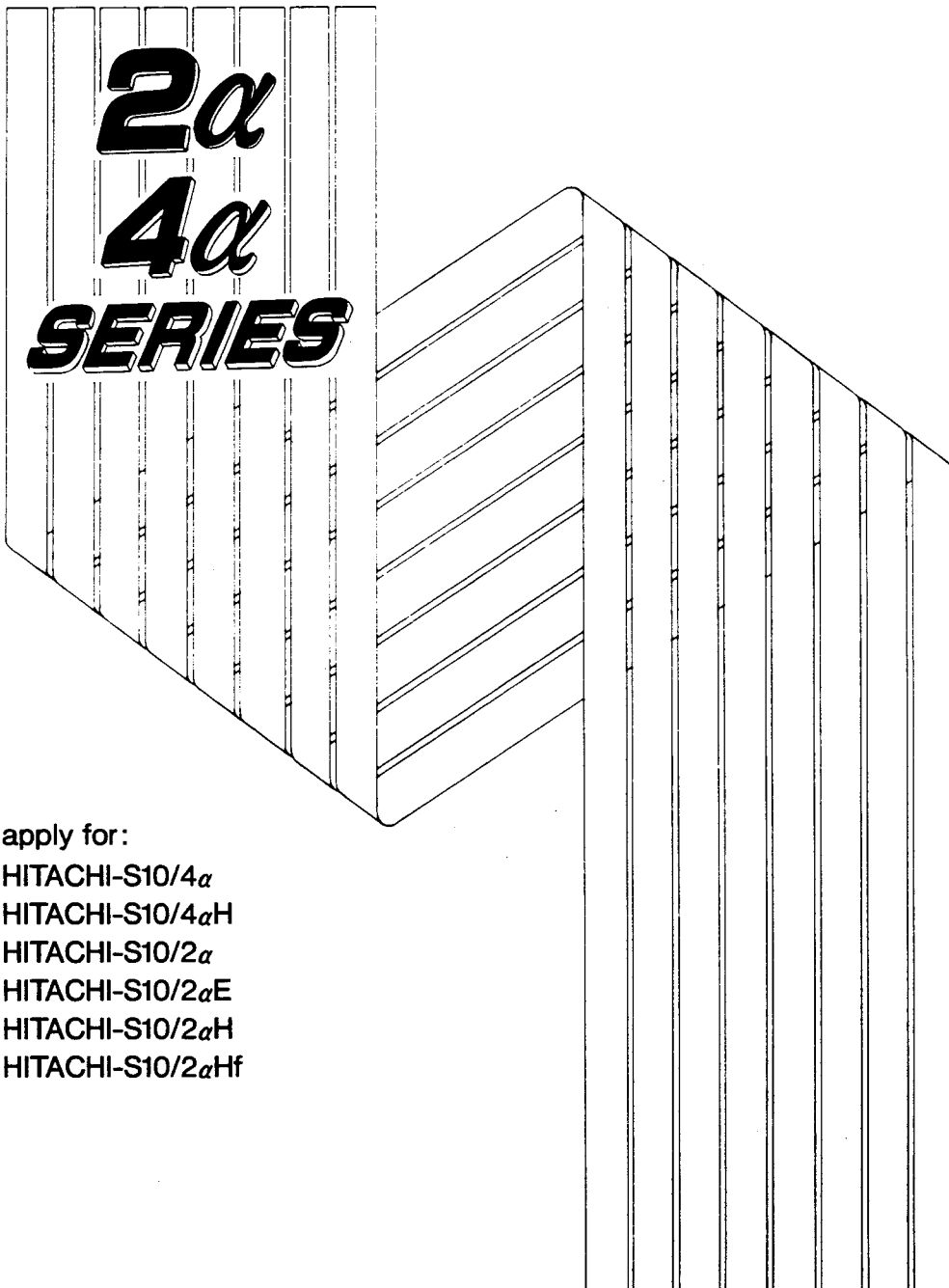


SOFTWARE MANUAL  
OPERATION  
**LADDER**

V5



apply for:

HITACHI-S10/4 $\alpha$   
HITACHI-S10/4 $\alpha$ H  
HITACHI-S10/2 $\alpha$   
HITACHI-S10/2 $\alpha$ E  
HITACHI-S10/2 $\alpha$ H  
HITACHI-S10/2 $\alpha$ Hf

**HITACHI**

## **NOTE**

All information in this manual is based on the latest product information available at the time of printing. Hitachi has reviewed the accuracy of this manual, but assumes no responsibility for any omissions or errors which may appear. The design of the product is under constant review and, while every effort is made to keep this manual up to date, the right is reserved to change specifications and equipment at any time without prior notice.

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## **SAFETY AWARENESS SUMMARY**

The following are general safety precautions which must be observed in the application, operation, and maintenance of this equipment. Failure to comply with these precautions or the other caution statements in the manuals violates safety standards of design, manufacture, and intended use. Hitachi assumes no liability for the user's failure to comply with these requirements. This summary, and the caution statements in the manuals, represent warnings of certain dangers of which we are aware. You, as the end user of the equipment, must follow these warnings and all other applicable precautions, including codes and laws, to achieve safe application and operation of this equipment.

### **Safety Disconnects**

As outlined in the manuals, you must provide means to disable the control and power circuits to guard against unexpected or sudden motion or energization of equipment during operation and maintenance. NEVER WORK ON WIRING WHICH IS ENERGIZED.

### **Care in Programming and Precautions Against Equipment Failure**

The user must follow procedures as indicated in the manuals and as dictated by sound engineering judgment. Mistakes in programming may result in sudden or unexpected motion or energization. To protect against programming errors or equipment failure, you must provide physical guards and cages to prevent physical contact with equipment, and back-up safety equipment independent of the programmable controller; the latter includes overspeed protection, overtemperature protection, and electro-mechanical stop switches. NEVER DEPEND ON SOFTWARE OR CONTROLS TO PROTECT PERSONNEL WITHOUT PREPARING APPROPRIATE LOCKOUTS AND EQUIPMENT GUARDS.

### **Warning Devices**

The user should provide audible and visual warning devices to warn persons to get clear of machines before they start. The user must properly program the programmable controller to operate these devices before the machine starts.

### **Environmental Requirements**

This equipment is not suitable for use in an explosive atmosphere. If inputs or outputs are wired to devices in an explosive atmosphere, you must insert appropriate approved electrical barriers in the wiring conduit, install the equipment in explosion-proof cabinets and wire the installation according to the appropriate electrical code (ex. National Electric Code.) The other environmental requirements in the manuals must also be met, otherwise equipment failure could cause personal injury or property damage.

### **Do Not Service or Adjust Internal Parts**

Personal injury may result from unauthorized servicing or adjusting parts inside the cabinets.

### **Prevent Spillage of Liquid onto the Equipment**

Personal injury could result if any liquid is spilled or poured onto this equipment. The equipment is general purpose (NEMA Type 1 ventilated) and not waterproof.

### **Prevent Entry of Foreign Matter into the Equipment**

Permitting metal chips and/or other foreign matter to enter the equipment could cause a short-circuit that could result in personal injury or property damage.

### **Keep the Plant Free of Vermin**

Rodents, like rats and mice, may chew on cables and equipment. This could cause personal injury or property damage.

### **Do not Install the Equipment Near Strong Magnetic Fields**

Operating the equipment near a strong magnetic field could cause malfunctions that could result in personal injury or property damage.

### **Protect From Shock And Vibration**

Subjecting the equipment to shock or vibration could cause malfunctions that could result in personal injury or property damage.

### **Dangerous Voltages**

Dangerous voltages are present whether the equipment is running or not. These voltages could be inside the programmable controller enclosure or in external control devices.

### **Danger of Manually Operating Limit Switches or Pushbuttons**

Never operate a limit switch by hand. The resulting motion could cause personal injury. If you plan to operate a limit switch, be certain that you are clear of any other moving parts, then use a long wooden pole. Do not operate a pushbutton during checkout or at any other time unless you are sure what action the pushbutton causes, and are sure nobody is near any part that might move or be energized unexpectedly.

### **"RUN/STOP" SWITCH CAUTION**

The "RUN/STOP" switch only stops execution of the ladder logic program or Hi-Flow program. Digital and analog outputs are left in the active state when execution stops, unless the optional rungs described in the CPU manual have been added. The "RUN/STOP" switch does not affect the operation of C-language or FA-BASIC language programs. Outputs can still be produced in response to C-language or FA-BASIC programs, or by the action of programmers typing in commands in these languages, while the "RUN/STOP" switch is in the "STOP" position.

DO NOT DEPEND ON THE STOP SWITCH TO STOP MOVING PARTS OR TO PREVENT UNEXPECTED MOTION OR ENERGIZATION. USE HARDWIRED SAFETY STOPPING DEVICES, AS EXPLAINED IN THE CPU MANUAL. ALWAYS DISCONNECT AND LOCK OUT POWER AND CONTROL VOLTAGES BEFORE WORKING ON ELECTRICAL CIRCUITS OR PARTS THAT CAN MOVE.

### General Specifications

Supply voltage	100-120 VAC, single-phase 50/60 Hz $\pm$ 4 Hz	
Supply voltage range	85-132 VAC	
Permissible duration of momentary power failure	10 ms or less (at rated input)	
Temperature	Operational	32 to 131 °F (0 to 55 °C)
	Storage	-4 to 158 °F (-20 to 70 °C)
Humidity	Operational	30-90% RH
	Storage	10-90% RH
Vibration resistance (Max)	0.6 G (1000 rpm)	
Impact resistance (Max)	10 G	
Electrical noise tolerance	Noise Voltage 1,200 Vpp Noise duration 1 $\mu$ sec Noise frequency 50 Hz	
Voltage resistance	1,500 VAC, 1 min. between each external AC terminal and case	
Insulation resistance	5 M $\Omega$ or more as measured with 500 VDC insulation resistance meter between each external AC terminal and case	
Resistance to ground	Less than 100 ohms	
Dust/gases	0.1 mg/m <sup>3</sup> or less; no corrosive gas permitted	
Cooling method	Natural cooling	

## Programming Terminal

### PSE $\alpha$ Specifications

Supply voltage		100–120 VAC $\pm_{-15}^{+10}$ % single-phase 50/60 Hz $\pm$ 4 Hz	
Power re- quirement	Continuous	130 VA	
	Surge	6,000 VA	
Temperature		Operational	Storage
		50 to 95 °F (10 to 35 °C)	23 to 122 °F (–5 to +50 °C)
Humidity		40–80% RH	10–98% RH
Vibration (Max)		0.5 G, 17 Hz vibration applied for 30 s	
Dust		0.1 mg/m <sup>3</sup> or less	
Dimensions	EL cover closed	400 W $\times$ 110 H $\times$ 350 D (mm)	
	EL cover open	400 W $\times$ 230 H $\times$ 350 D (mm)	
Weight		Approx. 4.5 kg (10 lb)	



## PREFACE

This manual was prepared to make the best use of the use of ladder logic programming system used for the creation/modification of the programs for HITACHI-S10 Series, a programmable controller (PCs).

All the functions provided by the ladder logic programming system are described in this manual. Note that some functions described in this manual are not available in all types of PCs.

### Notice

HITACHI-S10/2 and HITACHI-S10/4 are shortened to 2 and 4, respectively throughout this manual.

This manual corresponds to the version for the following ladder system.

F/D Name	F/D Version
LADDER SYSTEM TYPE:S10A-35SFD	Ver.5.0 or later
Compact PMS SYS TYPE:S102A-35CPMS	Ver.5.0 or later

When you use the F/D for Ver.5.0 or before, refer to the following manuals.

F/D		Manual Number
Name	Version	
LADDER SYSTEM TYPE:S10A-35SFD	Ver.4.0~4.2	SP-3-017
	Ver.3.* or before	SP-3-111 SP-3-112
Compact PMS SYS TYPE:S102A-35SFD	Ver.4.1~4.2	SP-3-017
	Ver.3.* or before	SP-3-111 SP-3-112

## CONTENTS

	PAGE
1. BEFORE USE .....	1
1.1 How to Use .....	2
2. FUNCTIONS OF PSE .....	9
2.1 Function System .....	10
2.1.1 Function system of PSE .....	10
2.2 Function Keys .....	14
2.3 Remote/Local Function .....	17
2.3.1 Remote function (Online) .....	17
2.3.2 Local function (Offline) .....	17
2.4 PCs Modes and PSE Functions .....	19
3. SYSTEM START UP .....	21
3.1 Outline of PCs System Start-Up Procedure .....	22
3.2 PSE Start-Up Procedure .....	24
3.2.1 Flow of PSE start-up procedure (from POWER-ON to start of program creation) .....	24
3.2.2 Loading PCs OS .....	28
3.2.3 Specifying multi-connection PCs No. ....	29
4. FUNDAMENTALS OF PROGRAMMING .....	31
4.1 Outline of Ladder Program .....	32
4.1.1 Programming key .....	32
4.1.2 Outline of symbols .....	35
4.1.3 Relay functions and range of No. input .....	37

	PAGE
4.1.4 PSE monitor screen format .....	39
4.1.5 PCs/PSE status display field .....	40
4.1.6 Monitor field .....	41
4.1.7 Relay ladder chart field and comment field .....	41
4.2 Programming Grammar and Restrictions .....	42
4.2.1 Size of ladder circuit .....	42
4.2.2 Right-down circuit and its working sequence .....	43
4.2.3 Ladder circuit and its steps .....	45
5. PROGRAMMING METHOD .....	47
5.1 Functional Outline of Programming .....	48
5.1.1 Programming system .....	48
5.1.2 Flow of programming .....	48
5.2 Creation .....	49
5.2.1 Schematic flow of creation procedure .....	49
5.2.2 Outline of creation .....	49
5.2.3 Outline of creation operation .....	50
5.2.4 Sequence circuit block creation .....	52
5.2.5 Input of preset of coil with preset .....	56
5.2.6 Example of circuit creation .....	59
5.3 Read .....	61
5.3.1 Outline of read processing .....	61
5.3.2 Sequential read and backward read .....	63
5.3.3 Specified circuit read .....	65
5.3.4 Last circuit read .....	66
5.3.5 Contact cross reference .....	67
5.3.6 Output coil cross reference .....	68

	PAGE
5.4 Modification .....	69
5.4.1 Schematic flow of modification procedure .....	69
5.4.2 Outline of modification .....	70
5.4.3 Modification procedure .....	71
5.4.4 Insertion .....	72
5.4.5 Replacement .....	74
5.4.6 Deletion .....	75
5.4.7 Line insertion .....	77
5.4.8 Line deletion .....	79
5.4.9 Batch deletion .....	80
5.4.10 Preset change .....	82
5.4.11 Batch name change .....	85
5.4.12 Nest copy and deletion (subroutine) .....	91
5.5 Adding Ladder Block .....	98
5.5.1 Location for adding ladder circuit .....	98
5.5.2 Adding a block as the leading circuit .....	100
5.5.3 Adding a sequence block next to a specified circuit .....	101
5.5.4 Adding a block as the last circuit .....	102
5.6 N Coil No. ....	104
5.7 Capacity Display .....	105
5.8 Screen Switching .....	107
6. FLOPPY DISK INPUT/OUTPUT .....	111
6.1 Outline of Function .....	112
6.2 Descriptions of Processes .....	116
6.3 Operation .....	121

	PAGE
6.3.1 Outline .....	121
6.3.2 Procedure .....	123
6.4 File Search (DIRECTORY) .....	124
6.4.1 All files search .....	124
6.4.2 Header search .....	125
6.5 Writing: Save (PCs → FLOPPY) .....	127
6.5.1 Ladder program save (Standard) .....	127
6.5.2 Saving ladder program only (Mode A) .....	130
6.5.3 Saving ladder program area (Mode B) .....	131
6.5.4 Saving ladder + register (Mode C) .....	131
6.5.5 Saving specified memory area .....	132
6.6 Reading: Load (Floppy Disk →PCs) .....	134
6.6.1 Load without address specified .....	134
6.6.2 Load with address specified .....	136
6.7 Deleting File (File Erase) .....	137
6.8 Compare (PCs <> FLOPPY) .....	139
6.9 Formatting (FORMATTING 3.5-inch) .....	144
6.10 Initialize (DISK INITIALIZE) .....	145
6.11 File Copy (FILE COPY) .....	146
6.12 Drive Selection (DRIVE SELECT) .....	150
7. CONTROL STATUS MONITOR .....	151
7.1 Outline of Functions .....	152
7.1.1 Function system and monitor screen .....	152
7.1.2 Dynamic monitor and static monitor .....	155
7.1.3 Dynamic monitor and input/output setting .....	155
7.1.4 Input/output setting and simulation .....	156

	PAGE
7.1.5 Control Status monitor .....	156
7.2 Ladder Circuit Monitor .....	157
7.2.1 Dynamic monitor and static monitor .....	157
7.2.2 Input/output setting (coil and contact) .....	158
7.2.3 Input/output set (Data manipulation parameter) .....	160
7.2.4 Data manipulation parameter setting and monitor .....	161
7.3 Matrix Monitor .....	162
7.3.1 Dynamic monitor and static monitor .....	162
7.3.2 Input/output setting .....	164
7.4 Time Chart Monitor .....	167
7.4.1 Dynamic monitor .....	167
7.4.2 Sampling time interval setting .....	169
7.5 Logic Tracer .....	171
7.5.1 Preparation for Logic Tracer Display .....	171
7.5.2 Trace data display .....	172
7.5.3 Trace interval setting .....	173
8. MCS .....	175
8.1 Outline of Function .....	176
8.1.1 Function of MCS .....	176
8.2 Operation .....	177
8.2.1 MCS menu screen process .....	177
8.2.2 Displaying contents of memory (MEMORY PRINT) ..	178
8.2.3 Rewriting memory (MEMORY PATCH) .....	180
8.2.4 Supplementary explanation of operations .....	182

	PAGE
8.3 Supplementary Description and Cautions to be used .....	184
8.3.1 Memory rewrite and PCs .....	184
9. PCs EDITION .....	187
9.1 Outline of Function .....	188
9.2 Operation .....	191
9.2.1 Changing timer(T), one-shot(U), and Counter(C) points .....	193
9.2.2 Changing sequence cycle .....	194
9.2.3 Changing remote I/O points .....	195
9.2.4 Setting CPU-CPU/SUBCPU-SUBCPU link transfer G area .....	196
9.2.5 Setting S mode fence .....	198
9.2.6 Registering 10msec. timer (T) .....	199
9.2.7 Registering external stop input No. ....	200
9.2.8 PCs memory all initial .....	201
9.2.9 Registering analog/pulse counter control data .....	202
9.2.10 Changing CPU-CPU/SUBCPU-CUBCPU link control data ..	204
9.2.11 Setting in-run rewrite mode .....	205
10. LPET .....	207
10.1 Outline of Functions .....	208
10.1.1 Outline of LPET process .....	208
10.1.2 Ladder program and LPET .....	208
10.2 Operation .....	209
10.2.1 Display of LPET contents (LPET MAP) .....	209



	PAGE
11. SETTING PCs NO. ....	211
11.1 Outline of Function .....	212
11.1.1 Outline of PCs No. setting process .....	212
11.2 Operations .....	213
11.2.1 Setting PCs No. ....	213
12. COMMENT INPUT/OUTPUT .....	216
12.1 Comment Input/Output Function .....	216
12.2 Comment Display/Generation (COMMENT(R&W)) .....	216
12.2.1 Outline .....	216
12.2.2 Comment generation installing operation .....	217
12.2.3 Comment file data display (COMMENT READ) .....	221
12.2.4 Comment file data generation (COMMENT WRITE) .....	223
12.2.5 Outline of comment data input .....	225
12.3 Comment Status Management .....	229
12.3.1 Outline .....	229
12.3.2 Comment status management items .....	230
12.3.3 Comment status management operation .....	231
12.4 Comment File Clear (COMMENT FILE CLEAR) .....	235
12.4.1 Deleting all data in comment file .....	235
12.4.2 Deleting partial data in comment file .....	236
12.5 Comment Loading (FLOPPY → PCs) .....	238
12.6 Spesifying Comment Display Status (SPECIFYING COMMENT DISPLAY STATUS) .....	241
13. PRINTER OUTPUT .....	243
13.1 Function of Printer Output .....	244

	PAGE
13.2 Examples of the Outputs of Various Lists .....	245
13.3 Basic Operation (Starting with PSE Main Screen) .....	255
13.4 Comment Specification Process .....	257
13.4.1 Outline .....	257
13.4.2 Operation .....	258
13.5 Specifying Output Format .....	259
13.6 Printer Output Interrupt .....	267
13.7 Output of Multiple Lists .....	268
13.8 Output of Title and File Header .....	270
13.9 Output of Memory Status List .....	271
13.10 Output of LPET List .....	272
13.11 Ladder Circuit List Output .....	273
13.11.1 Output of all circuits .....	273
13.11.2 Output of circuits in units of nesting Nos. ....	274
13.11.3 Output of circuits in units of sequence blocks ...	277
13.12 Output of Preset Data .....	281
13.13 Output of Device-Usage List .....	282
13.14 Output of Cross Reference List .....	283
13.15 Output of Coil Cross Reference List .....	284
13.16 Output Memory Dump List .....	285
13.17 Output of Comment List .....	286
13.17.1 Output of all comments .....	286
13.17.2 Output of certain comments .....	288
13.18 Print out when an Error Code EA Occurs .....	290
13.18.1 When an EA error occurs in the ladder circuit with one nesting coil N000: .....	290
13.18.2 When an EA error occurs at N000 in the ladder circuit with more than two nesting coils: .....	291

	PAGE
13.18.3 When an EA error occurs at an address other than N000 in the ladder circuit with more than two nesting coils: .....	292
14. ERROR CODE LIST .....	293

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# 1 BEFORE USE

## 1.1 How to Use

### (1) PSE

- The PSE is can be used to produce a program without being connected to the PCs since it has the internal memory of its own. (This function is called the local function.)
- Be careful not to remove the power when you are preparing a program by using PSE only. The contents of the PSE memory is erased, if the power is removed.
- Pressing the reset switch located at the back of the left side of the PSE erases the program, establishing the same status as that at the time when the system F/D (a floppy disk) was loaded.
- A program, when being created/modified, should be saved on a floppy disk.

### (2) Creation/Monitoring/Management of Program

#### ■ Creating/modifying a program

- Fundamentals such as the meaning of a symbol used in a program, ladder format, etc.

Refer to: Fundamentals of Programming.

- Method of operations necessary for creating, modifying, or viewing a program

Refer to: Programming Method.

#### ■ Saving/Loading a program

- A program is written onto a floppy disk (saving). Read a program from floppy disk into the PCs (loading).

Refer to : Floppy Disk Input/Output.

#### ■ Monitoring program operations

The operations of a program may be monitored by using the following methods:

- Ladder circuit monitor
  - . Monitors ON/OFF status of a ladder circuit.  
Refer to: Ladder Circuit Monitor.  
Two screens, A and B, can be used in monitoring.  
Refer to: Screen Switching.
  - . Check the operation of a program by turning ON/OFF the coils and contacts.  
Refer to: Input/Output Setting.
- Matrix monitor
  - . Monitors ON/OFF status of coils and contacts up to 512 points in units of 16 points.  
Refer to: Matrix Monitor.
  - . Checks the operations by turning ON/OFF the coils and contacts.
- Time chart monitor
  - . Monitors the change of the ON/OFF status as the time elapses.  
Refer to: Time Chart Monitor.
- Logic tracer
  - . Collects data of the ON/OFF status of a specified coil for every specified sequence cycle to show them on the time chart.  
Refer to: Logic Tracer.
- MCS
  - . Reads and writes specified data using either mnemonic codes or absolute addresses.  
Refer to: MCS.
  - . Monitors change of data.

# 1 BEFORE USE

---

## ■ Comment display

- Displays a comment in the ladder circuit on the PSE screen.

Refer to: Comment Input/Output.

- Comments can be created for the following symbols:

X, Y, R, K, T, U, C, V, G, N, P, E, J, Q, DW, and PW

## ■ Generation of circuit diagram

- Prints the completed program to a printer.

Refer to: Printer Output.

- Prints the ladder circuit to a printer with comments attached.

## (3) Basic Operation

```
PSE MENU
KEY IN MENU No. =
-----
                PSE SYSTEM MENU
-----
1 : : MCS
2 : : LPET (SQET)
3 : : SELECTED RENAMING
4 : : NESTING COPY & DELETE
5 : : TIME CHART MONITOR
6 : : MATRIX MONITOR
7 : : PRINT OUT
8 : : COMMENT READ & WRITE
9 : : COMMENT DISPLAY
A : : PCS NO. SET
B : : PCS EDITION
C : : LOGIC TRACER
D : : PRET (C-MODE) SET
E : : UFET (USER FUNC.) SET
-----
```



---

Menu No.	Description
1	..... Memory read/rewrite
2	..... Display of LPET (Ladder program, Edition Table)
3	..... Batch name change
4	..... Nesting program copy/delete
5	..... Time chart monitor
6	..... Matrix monitor
7	..... Printer output
8	..... Comment read/creation
9	..... Comment display
A	..... PCs No. set
B	..... Change of timer, one-shot, and counter points, sequence cycle change, number of remote I/O points change, CPU-CPU link data setting, S-mode fence setting, 10 msec timer registration, external stop input number registration, PCs memory all initial, analog/pulse counter control data registration, CPU-CPU link control data change, and On Line rewrite mode setting
C	..... Logic tracer
D	..... C-mode program registration
E	..... User arithmetic function registration






- The operations can be made with ease just by entering data, guided by the cursor appearing on the screen.
- The basic operations to be selected are generally classified into two types:
  1. Entering the number of a desired item
  2. Pressing the SET or a modifying key






## 1 BEFORE USE

---

### ■ Pressing the SET or a modifying key

When a selected key is shown on the screen (such as SET/RTY/CLS), it has the meaning as stated below:

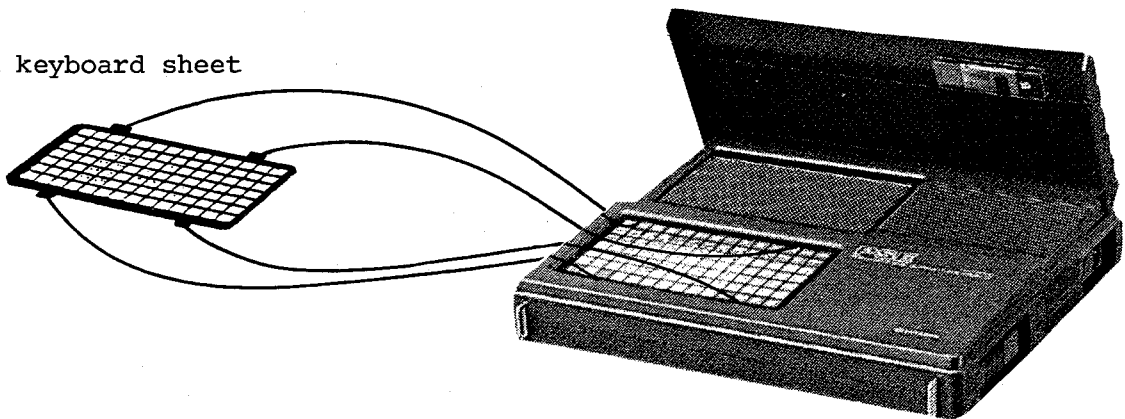
Display on Screen	Corresponding Key	Meaning
SET	 Key	Used to execute selected operation
CLS	 Key	To return to the preceding screens.
RTY	 Key	To reset data
CNT	 Key	To repeat the process
DEL	 Key	To delete a file, etc.

Display Screen Name	Corresponding Key	Meaning
SET	 Key	Used when conditions are satisfied.
CLS	 Key	Brings back the screen to one previous screen or more.
RTY	 Key	Resets data.
CNT	 Key	Repeats the same processing.
DEL	 Key	Deletes files and others.

#### (4) Keyboard

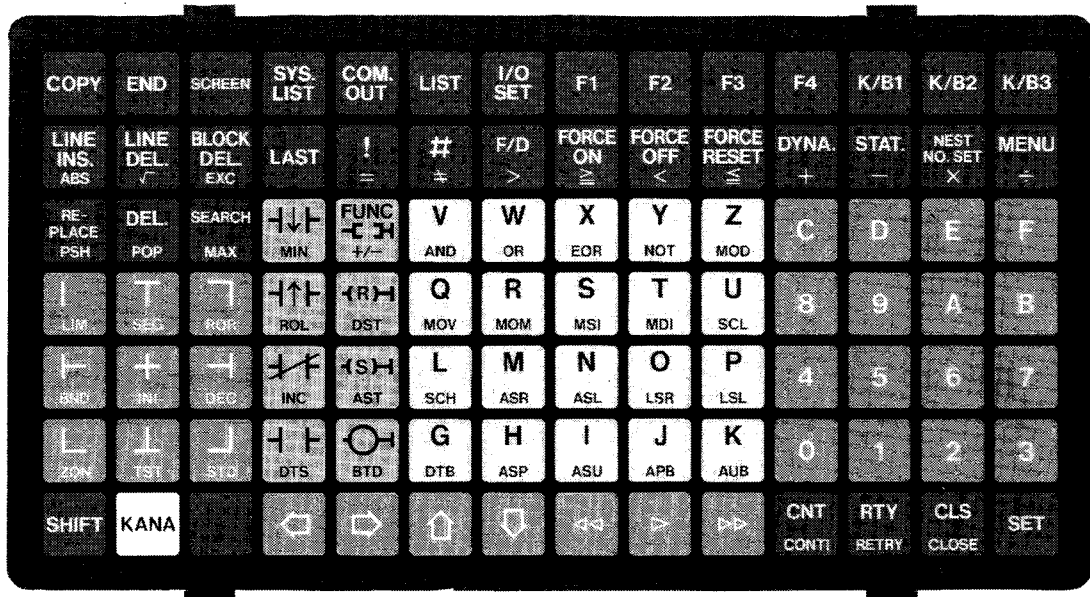
Put the English Keyboard Sheet over the Japanese keyboard to operate.

English keyboard sheet

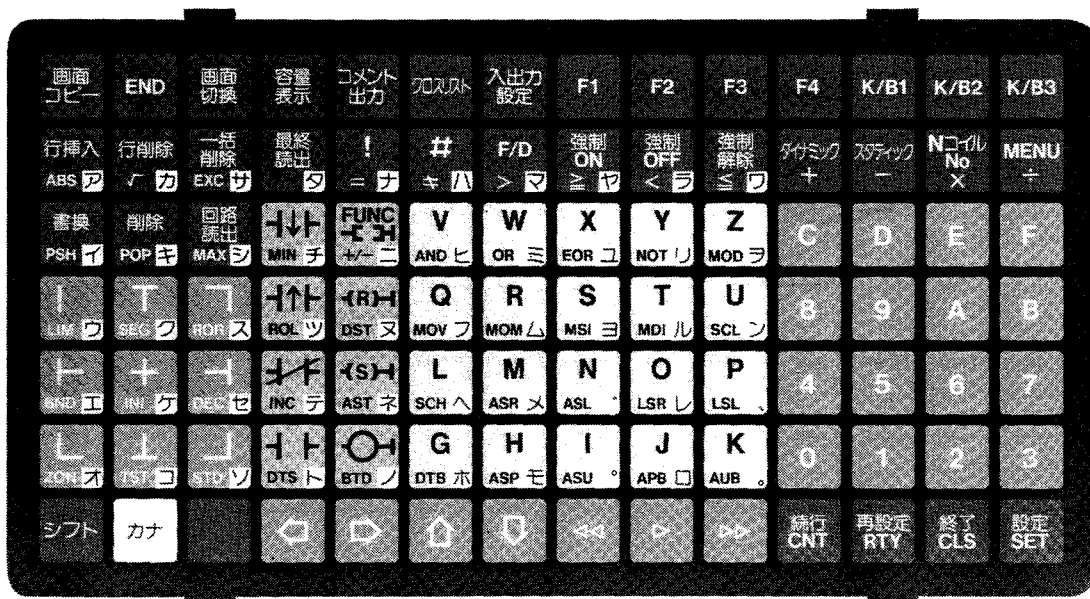


# 1 BEFORE USE

## ■ English keyboard sheet (optional)



## ■ Japanese keyboard sheet (standard)

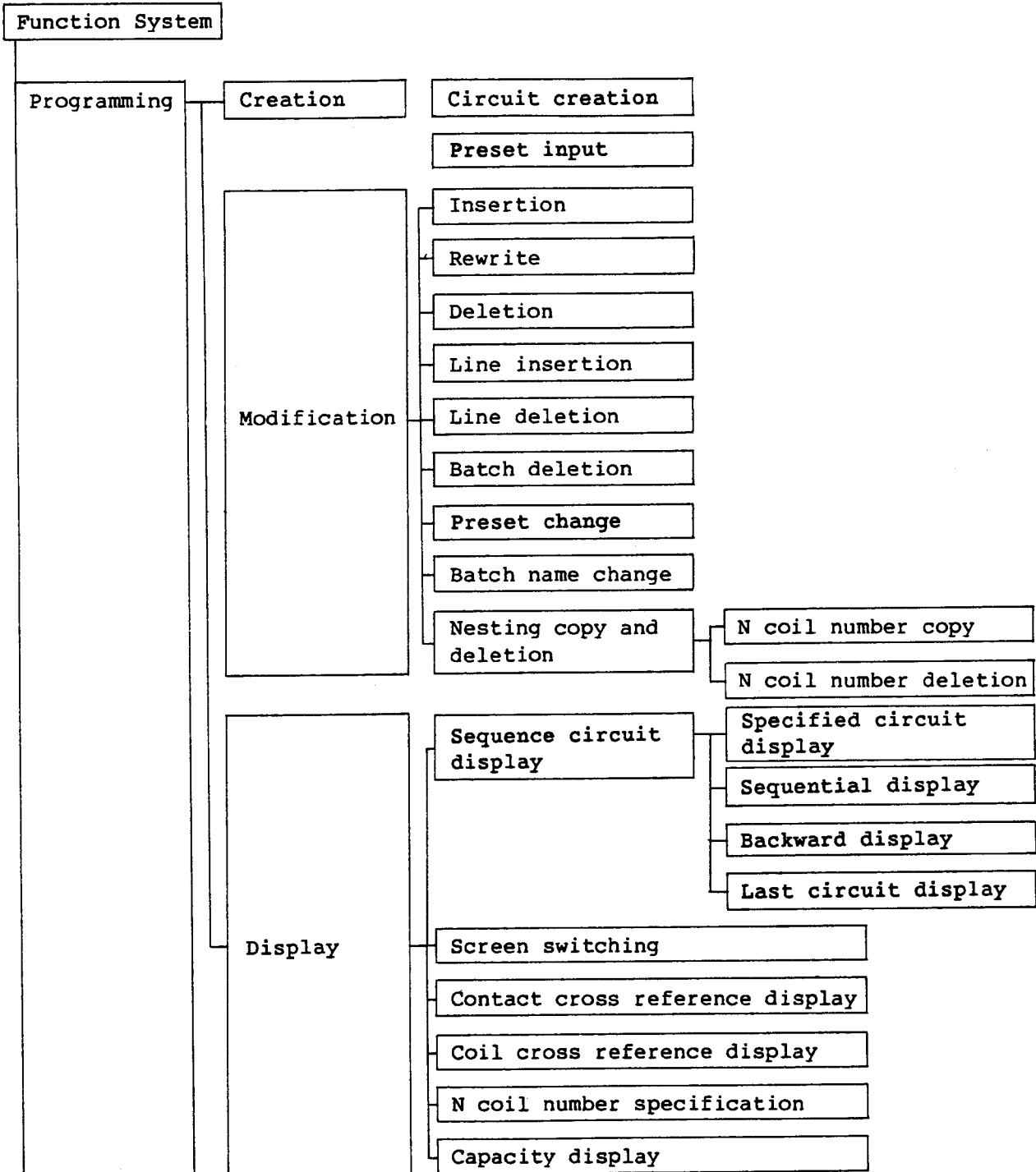


## **2 FUNCTIONS OF PSE**

## 2 FUNCTIONS OF PSE

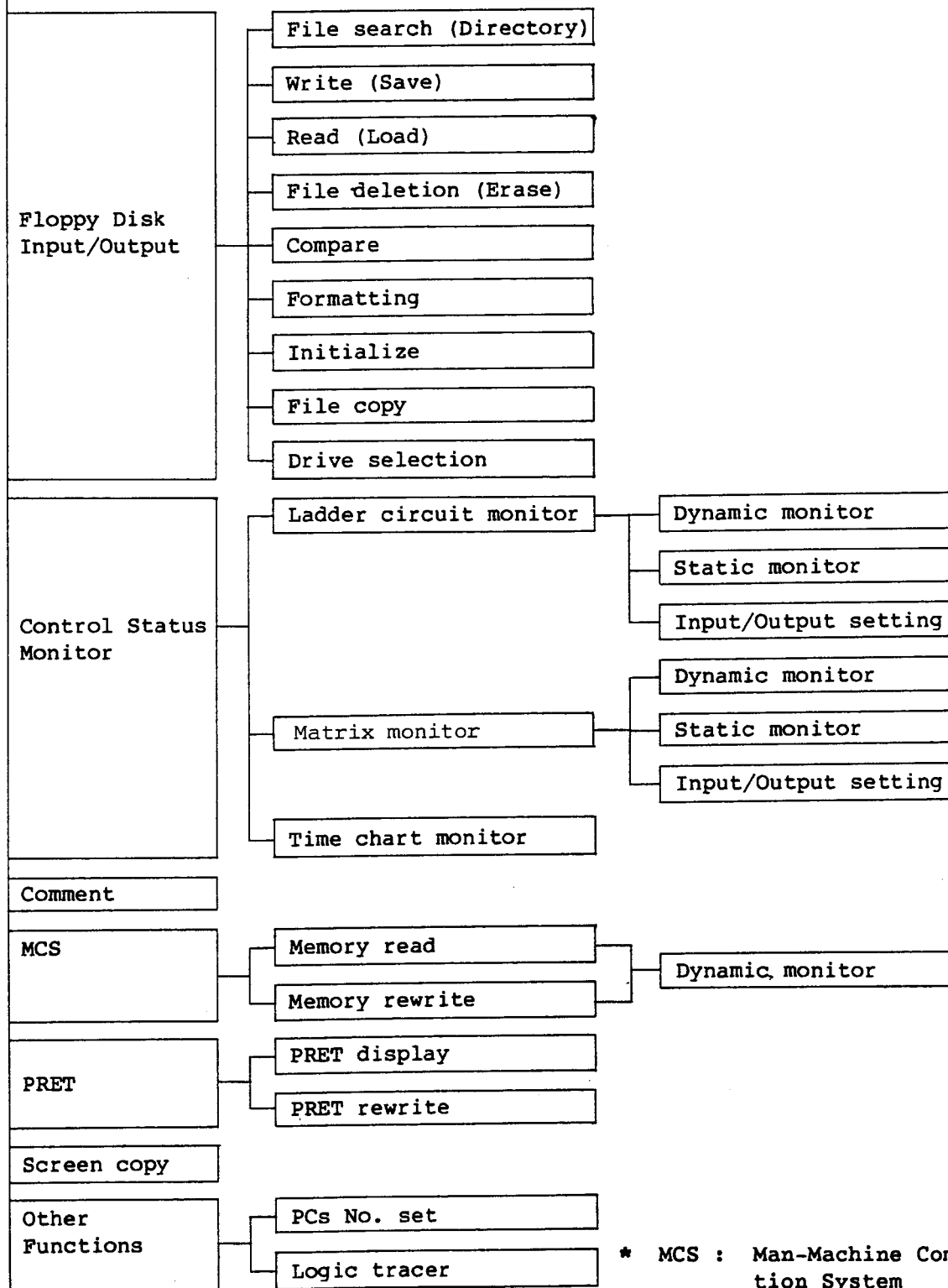
### 2.1 Function System

#### 2.1.1 Function system of PSE



Continued on page 11

Continued from page 10



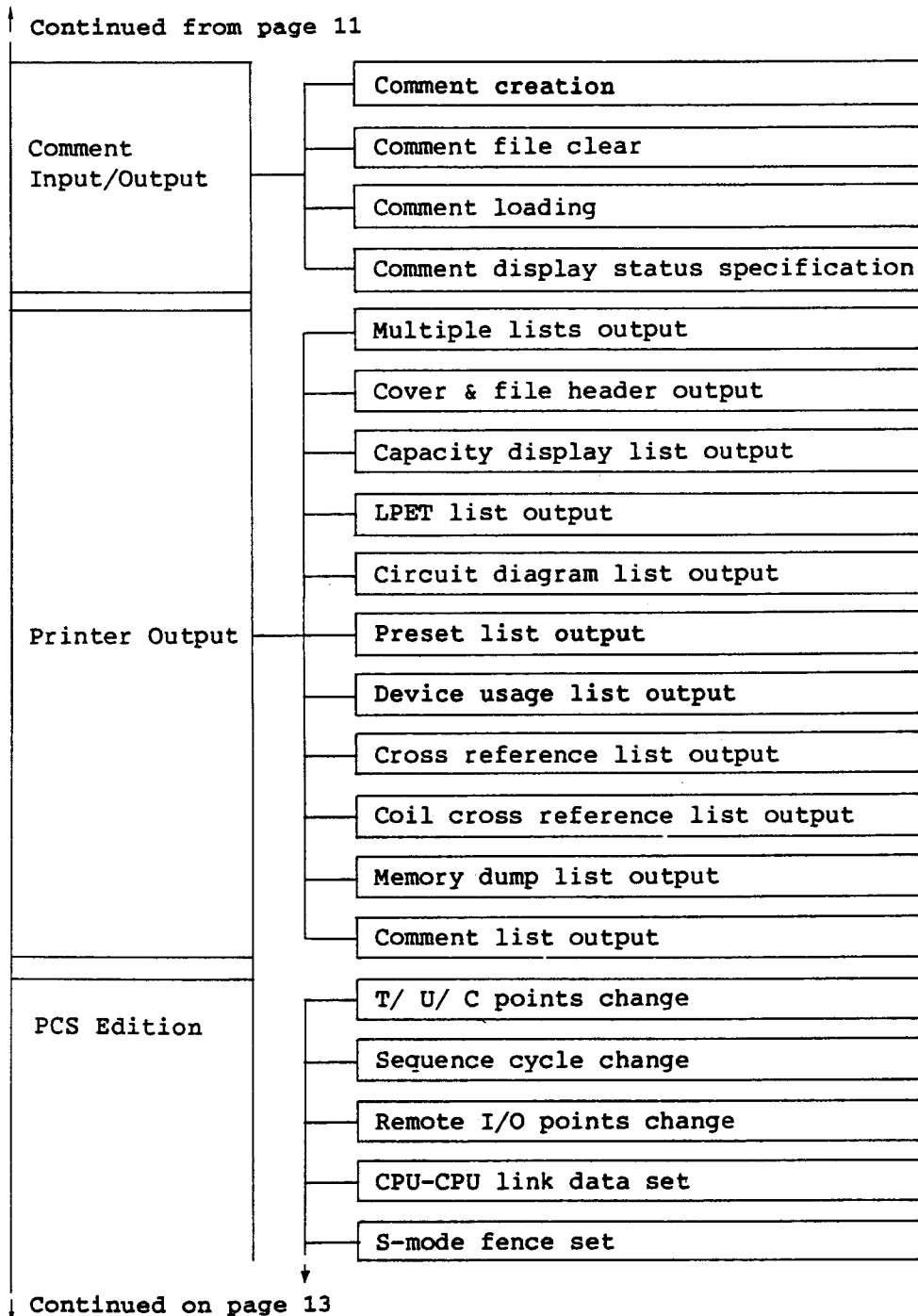
\* MCS : Man-Machine Communication System

\*\* PRET: Program Execution Table

Continued on page 12

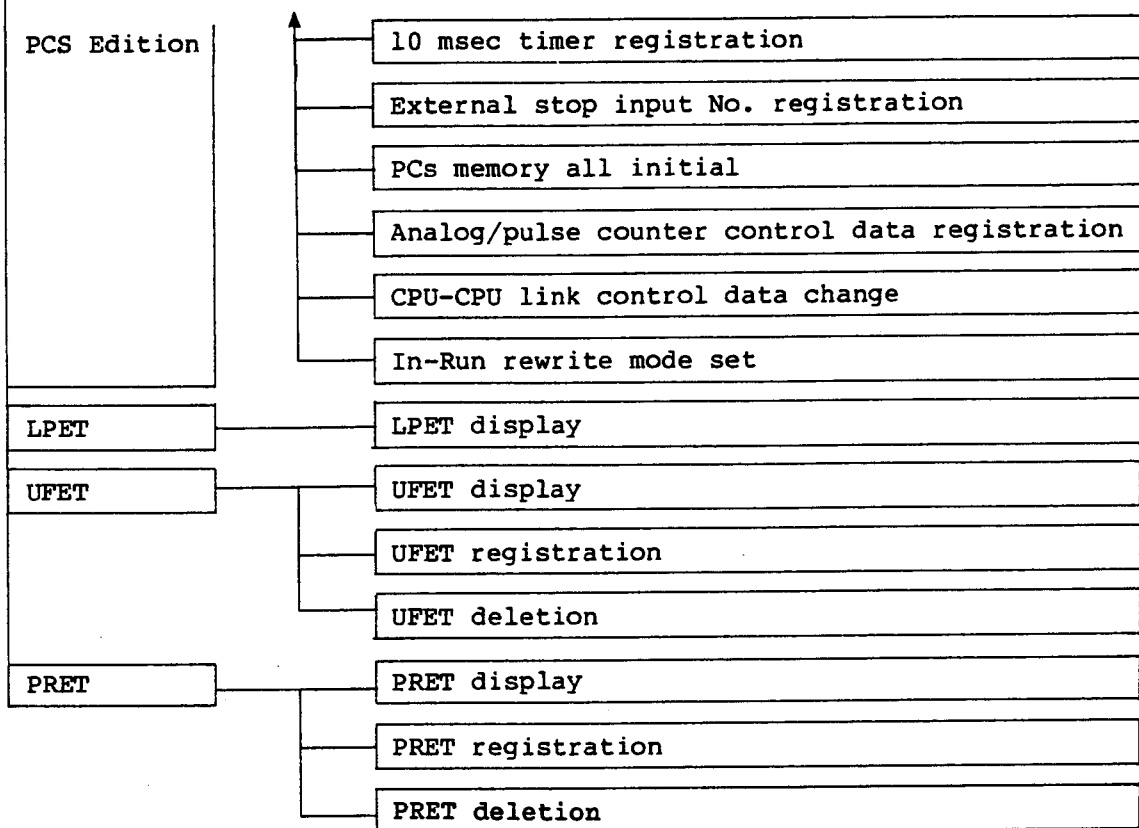
## 2 FUNCTIONS OF PSE

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Continued from page 12



2.2 Function Keys

COPY	END	SCREEN	SYS. LIST	COM. OUT	LIST	I/O SET	F1	F2	F3	F4	K/B1	K/B2	K/B3
LINE INS. ABS	LINE DEL. $\sqrt{\quad}$	BLOCK DEL. EXC	LAST	! =	# ≠	F/D >	FORCE ON ≥	FORCE OFF <	FORCE RESET ≤	DYNA. +	STAT. -	NEST NO. SET ×	MENU +
RE-PLACE PSH	DEL POP	SEARCH MAX											

- |      |
|------|
| COPY |
|------|

 . Prints out the screen being displayed. (The printer is necessary.)
- |     |
|-----|
| END |
|-----|

 . Ends programming.
- |        |
|--------|
| SCREEN |
|--------|

 . Alternate screens (A and B).
- |           |
|-----------|
| SYS. LIST |
|-----------|

 . Displays capacity of sequence program, system edition information, address information etc.
- |          |
|----------|
| COM. OUT |
|----------|

 . Displays comment of contacts or coils.
- |      |
|------|
| LIST |
|------|

 . Displays cross reference list of contacts or coils.
- |         |
|---------|
| I/O SET |
|---------|

 . Sets internal coils or on/off from the keyboard.
- |    |
|----|
| F1 |
|----|

 . Provided for expanded functions.
- |    |
|----|
| F2 |
|----|

 .
- |    |
|----|
| F3 |
|----|

 .
- |    |
|----|
| F4 |
|----|

 .
- |      |
|------|
| K/B1 |
|------|

 . Switch the keyboard.
- |      |
|------|
| K/B2 |
|------|

 .
- |      |
|------|
| K/B3 |
|------|

 . Inserts one line into Circuits.
- |               |
|---------------|
| LINE INS. ABS |
|---------------|

 . Deletes one line from Circuits.
- |                          |
|--------------------------|
| LINE DEL. $\sqrt{\quad}$ |
|--------------------------|

 . Deletes the portion of a circuit from the position specified by the cursor to the coil.
- |                |
|----------------|
| BLOCK DEL. EXC |
|----------------|

 .

LAST

. Displays the last circuit (1 block only).

!  
=

. Specifies the long (32-bit) word use by data manipulation instructions.

#  
≠

. Specifies the use of a constant by data manipulation instructions.

F/D  
>

. Reads/writes programs and performs floppy disk input output processing. (F/D processing)

FORCE  
ON  
≥

. (For expansion function)

FORCE  
OFF  
<

. (For expansion function)

FORCE  
RESET  
≤

. (For expansion function)

DYNA.  
+

. Displays consecutively on/off state of contacts and output coils.

STAT.  
-

. Displays on/off state of contacts and output coils when the key is pressed.

NEST  
NO.SET  
×

. Specifies the nesting (N) program No.

MENU  
+

. Displays the following PSE menu screen:

PSE MENU

KEY IN MENU No. =

PSE MENU

1:: MCS  
2:: LPET (SQET)  
3:: SELECTED RENAMING  
4:: SUBROUTINE  
5:: TIME CHART  
6:: MATRIX  
7:: PRINTER  
8:: COMMENT  
9:: PCS No. SET  
A:: PCS EDITION  
B:: LOGIC TRACER  
C:: PRET (C-MODE) SET  
D:: UFET (USER FUNC.) SET

## 2 FUNCTIONS OF PSE

---

RE-  
PLACE  
PSH

SEARCH  
MAX

(Special keys)

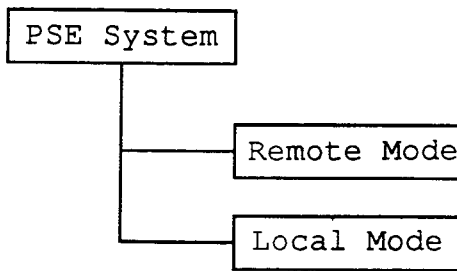
DEL  
POP

SHIFT

KANA

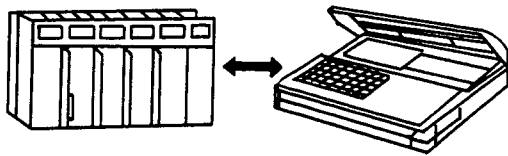
- . Rewrites data on the cursor position in the circuit.
- . Reads one block of the specified circuit.
- . Deletes data on the cursor position in the circuit.
- . Inputs function names for data manipulation and switching between upper and lower case English.
- . Used for entering kana indicated on the lower left of each key.  
Pressing once enters the kana mode.  
Pressing again releases the kana mode.

### 2.3 Remote/Local Function

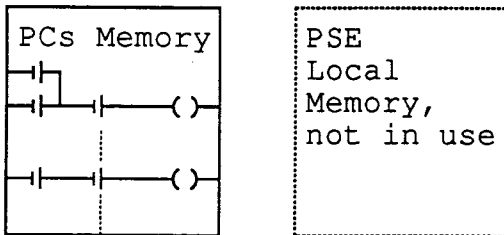


The PSE has two process functions; remote processing and local processing. Selection of remote/local mode is made during startup of the PSE.

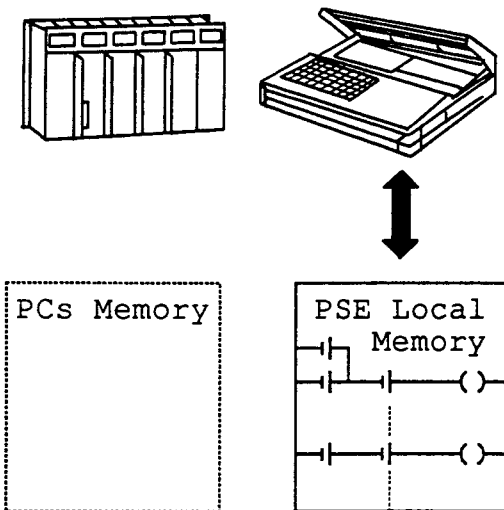
#### 2.3.1 Remote function (Online)



The remote mode connects the PSE and PCs, and directly reads and writes the PCs memory. In this mode, the PSE memory is not used to store a program.



#### 2.3.2 Local function (Offline)



A sequence program may be created and modified using only the PSE memory.

- It is necessary to save a generated program to a floppy disk, since the contents of the PSE memory is erased if the power is removed.

## 2 FUNCTIONS OF PSE

---

- Example of Use of Remote/Local Function

A program can be created in the design room using the local function and saved to a floppy disk. The program can then be loaded to the PCs from the floppy disk in the field by using the remote function. It is also possible to modify locally a program that was saved to floppy disk during the remote function.

## 2.4 PCs Modes and PSE Functions

The PCs modes (PSE display mode) and the related functions are as follows:

Functions of the PSE System		PSE Display Mode				
		Remote			Local	
Major Item	Minor Item	RUN	SIMU	STOP	LOC	
Program- ming	Creation	N	N	Y	Y	
	Correction (Only for preset change)	N(Y)	N(Y)	Y	Y	
	Read PCs → FLOPPY	Y	Y	Y	Y	
Floppy Disk (F/D)	Read processing (load) FLOPPY → PCs	N	N	Y	Y	
	Others	Y	Y	Y	Y	
Control State Monitor	Ladder Circuit Monitor	Monitor	Y	Y	Y	Δ*1
		Input/output set	Y	Y	Y	N
	Matrix Monitor	On/Off monitor	Y	Y	Y	Δ*1
		Input/output set	Y	Y	Y	N
	Time chart monitor	Y	Y	Y	Δ*1	
Printer output		Y*2	Y*2	Y*2	Y	
Comment		Y	Y	Y	Y	
MCS	Memory read	Y	Y	Y	Y	
	Memory write	N	N	Y	Y	
PRET, UFET	Content display	Y	Y	Y	N	
	Content registration and deletion	N	N	Y	Y	
Others	PSE reset	Y	Y	Y	Y	

## 2 FUNCTIONS OF PSE

---

Y: Yes, N: No, (Y): Only the preset can be changed.

- \*1 The monitor in the local state is used for demonstration. Though the logic is not correct, outlined screen operations can be given.
- \*2 Printer output in the remote function takes longer to process than compared with the local function.

### "STOP" SWITCH WARNING:

The "STOP" switch position on the CPU keyswitch only stops execution of the ladder logic program or Hi-Flow program. Digital and analog outputs are left in the state when execution stops, unless the optional rungs explained in the CPU manual are added. The stop switch does not affect the operation of C-language or FA-Basic language programs.

Outputs can still be controlled by C-language or FA-Basic programs, or by the action of programmers using these languages, while the switch is in the "STOP" position.

DO NOT DEPEND ON THE STOP SWITCH TO STOP MOVING PARTS, OR TO PREVENT UNEXPECTED MOTION OR ENERGIZATION. USE HARDWIRED SAFETY STOPPING DEVICES AS EXPLAINED IN THE CPU MANUAL. ALWAYS DISCONNECT AND LOCKOUT POWER AND CONTROL VOLTAGES BEFORE WORKING ON ELECTRICAL CIRCUITS OR PARTS WHICH CAN MOVE.



# **3 SYSTEM START UP**

### 3 SYSTEM START UP

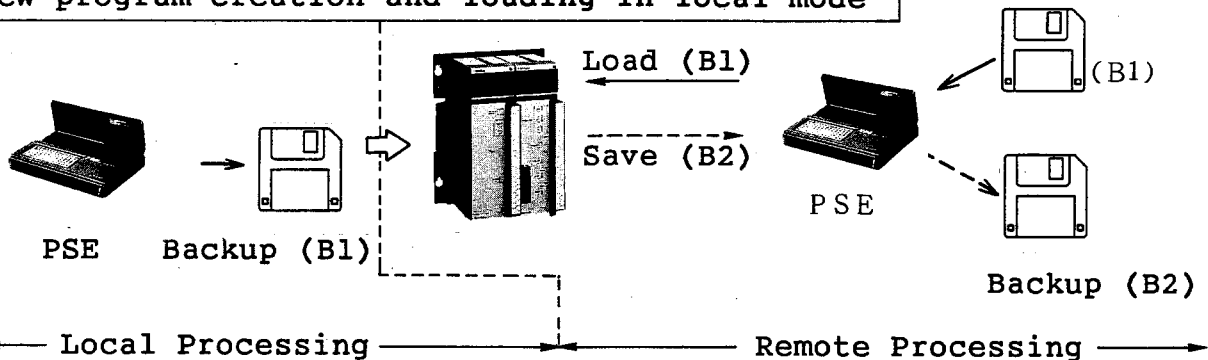
This chapter contains the description of the basic PCs start-up procedure (from program creation to loading). Refer to the respective option manual when using the following functions:

- (1) CPU-CPU Link ..... CPU-CPU Link Manual
- (2) CPU-CPU PSE Link ... CPU-CPU PSE Link Manual

#### 3.1 Outline of PCs System Start-Up Procedure

The following three methods are used for the user to activate the PCs system:

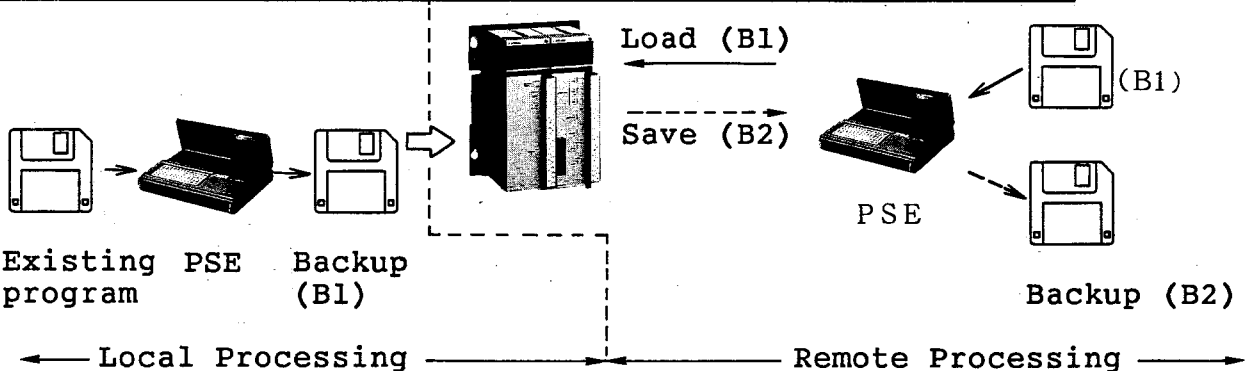
##### New program creation and loading in local mode



. A program is created and saved on a F/D.

. The program is loaded from the F/D.

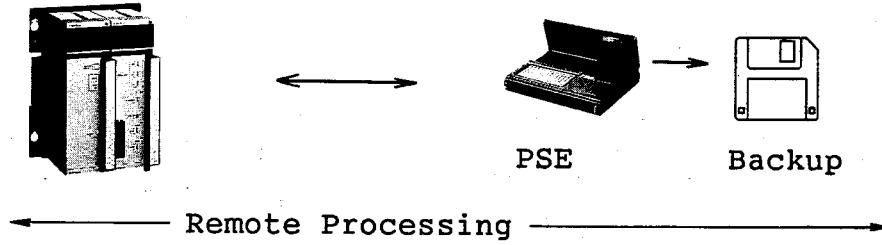
##### Existing program modification and loading in local mode



. A program is modified and saved in a F/D.

. The program is loaded from the F/D.

Direct creation of a new program in remote mode



. A program is created directly using the PSE.

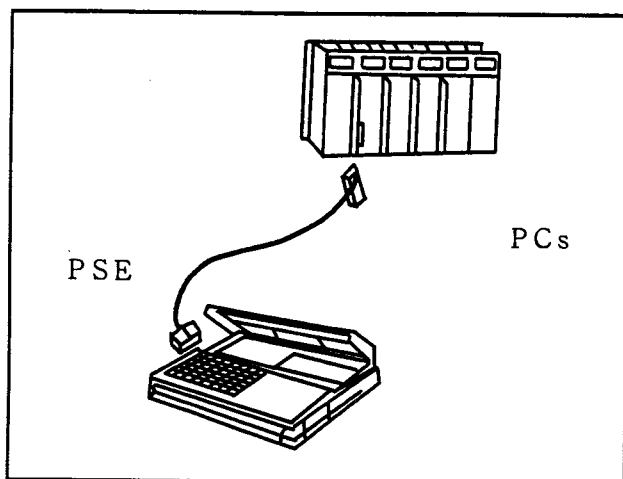
### 3 SYSTEM START UP

---

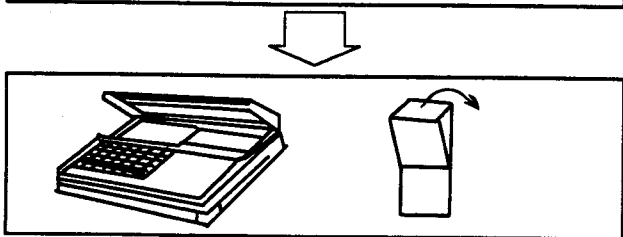
## 3.2 PSE Start-Up Procedure

### 3.2.1 Flow of PSE start-up procedure

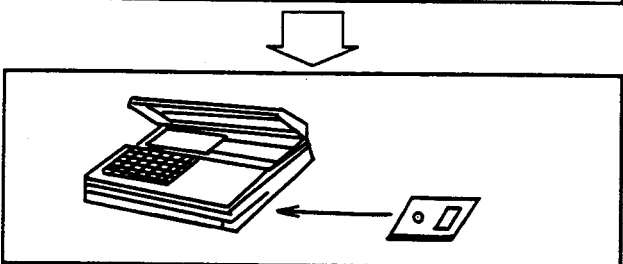
(from POWER-ON to start of program creation)



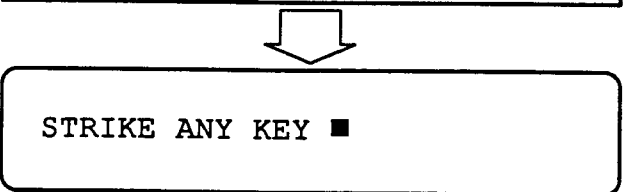
- [1] Connect the cable to the PCs correctly while the power to the PSE is OFF. The PCs status may be RUN or STOP at this time.



- [2] Turn on the power to PSE.

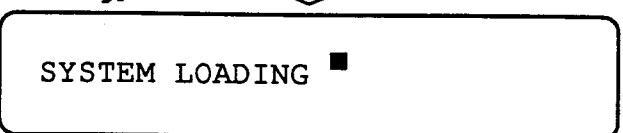


- [3] Insert the system floppy disk into the PSE.



- [4] Press any key when the message on the left side is displayed.

[Screen during loading]



The PSE displays "SYSTEM LOADING", and the system program is loaded into the PSE memory from a floppy disk.

Continued to the following page.

[Selection of Language for  
Error Message Display]

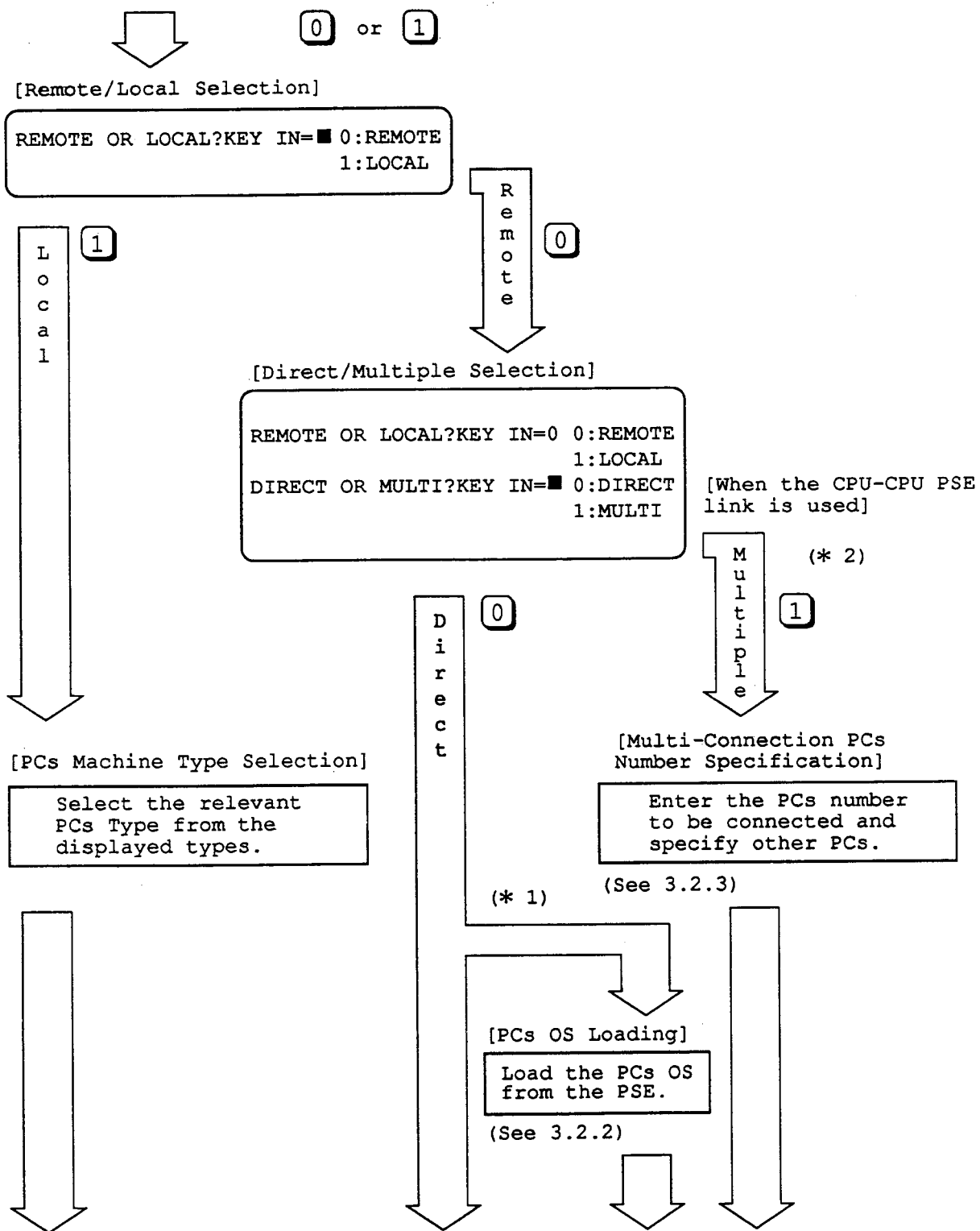


When the PSE is completely  
loaded, the "ERROR MESSAGE?"  
screen is displayed.

ERROR MESSAGE ?      KEY IN =      0:JAPANESE      1:ENGLISH

Select Japanese  or  
English  for error  
messages.

### 3 SYSTEM START UP



[PSE Main Screen]

```
PSE MAIN
FUNC. OR S-PROG. KEY IN !■
```

Once the PSE startup is completed, "PSE Main Screen" is displayed and the PSE then waits for input from programming or function keys.

- (\*1) The process proceeds to the OS loading when a PC is new or immediately after the PC's memory clear. The OS loading is not necessary for the some type of PCs.
- (\*2) For multi-connection, "CPU-CPU PSE Link Card (option) is necessary. Some type of PCs are not provided with the CPU-CPU PSE link function.

### 3 SYSTEM START UP

---

#### 3.2.2 Loading PCs OS

[1]

```
SET SYSTEM F/D & STRIKE [SET] KEY
PCS OS VERI.0 REVO.0
```

Press the **SET** key after confirming that the PSE system floppy disk has been inserted. The version and revision of the OS is displayed.

[2]

```
ADDRESS=/F0100
PCs OS LOADING ■
```

Loading starts, displaying the address being accessed.

Normal  
End

When the PSE start-up procedure ends, the PSE Main Screen is displayed.

```
PSE Main Screen
```

At abnormal end:  
"Remote/Local Selection Screen" appears again. Check that the system floppy disk is correct and that the switches are in "STOP" and "PROT OFF" positions.

- Press the **MENU** key on the remote/local selection screen, when the PCs OS loading does not succeed. The following screen appears:

```
KEY IN MENU No. =
-----
MENU
-----
0:FLOPPY
1:MCS
2:PCS OD LOADING
-----
```

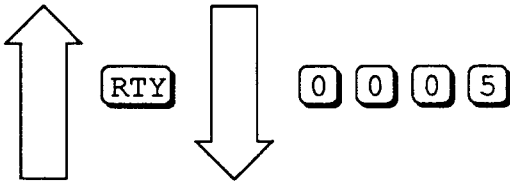
The status of the PCs memory may be checked or saved by using such functions as MCS, FLOPPY, etc. Also, the PCs OS may be replaced by using the "PCS OS LOADING" function. (The OS cannot be replaced by loading the OS file using the FLOPPY MENU.) Pressing the **END** key returns control to "Remote/Local Selection Screen".



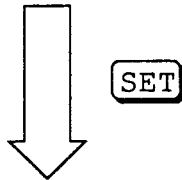
3.2.3 Specifying multi-connection PCs No.

[1]

PLEASE PCSNO. KEYIN= ■



PLEASE PCSNO. KEYIN=0005 OK? (SET/RTY)



PSE START-UP COMPLETED

[1]

Enter the PCs No. of the PCs being connected through CPU-CPU PSE link connection in 4 decimal digits.

Example:

[When PCs No. = 0005:]  
[Enter 0 0 0 5]

[2]

Confirm the entered PCs No.

**SET** ... When correct

**RTY** ... When incorrect

- For multi-connection, the CPU-CPU PSE Link Card (option) is necessary.
- Press the PSE Reset switch, if a circuit error occurs. Retry start-up when "Remote/Local Selection Screen" reappears.
- The PCs No. can be changed by initiating "PCs No. SET" in the PSE Menu Screen after the start-up of the PCs. The operation is the same as "Specifying multi-connection PCs number".

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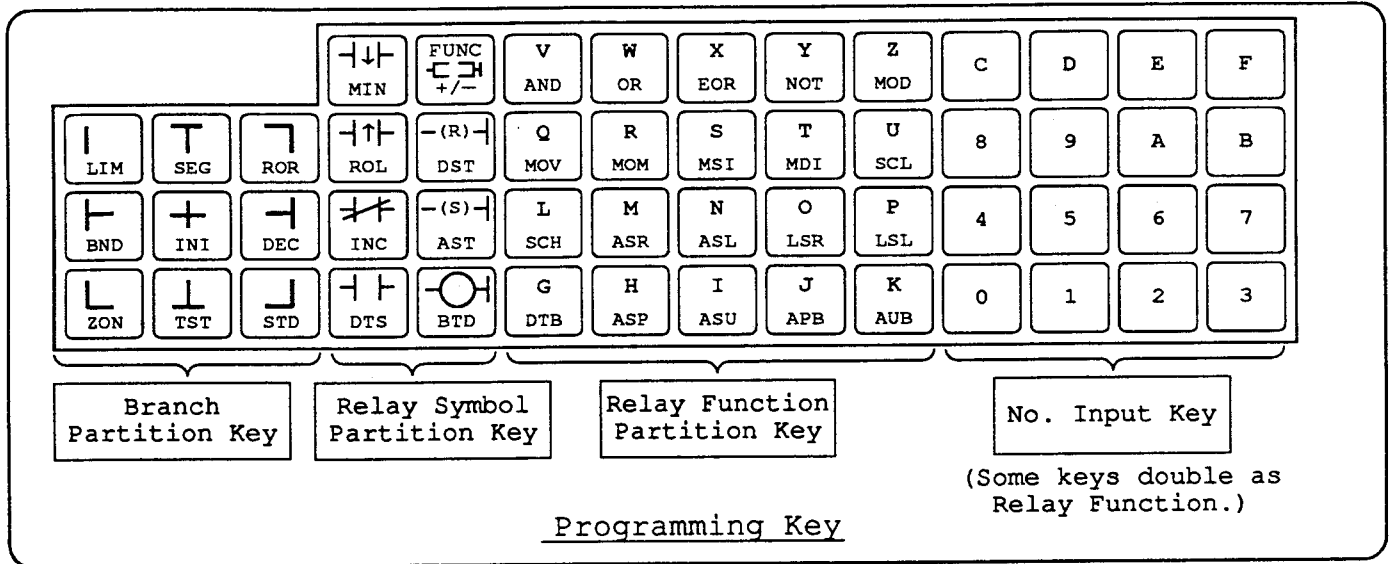
# **4 FUNDAMENTALS OF PROGRAMMING**

## 4 FUNDAMENTALS OF PROGRAMMING

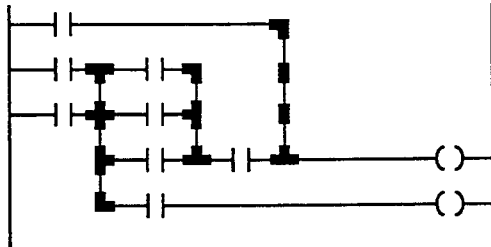
### 4.1 Outline of Ladder Program

#### 4.4.1 Programming Key

The layout of the programming keys to be used in creating programs is shown below:



#### [1] Branch Partition Key



Shows a branch to a contact or the step preceding or following the output in a ladder program.

#### [2] Relay Symbol Partition Key



Edge contact key: Falling edge detection contact of V








Edge contact key: Rising edge detection contact of V



"b" contact key : "b" contact of X, Y, G, R, K, T, U, C, N, Z, E, S, and P

## 4 FUNDAMENTALS OF PROGRAMMING

---

- 
"a" contact key : "a" contact of X, Y, G, R, K, T, U, C, N, Z, E, S, and P
- 
Data manipulation key : Activation coil of each data manipulation
- 
Keep relay reset coil key : Reset coil of K
- 
Keep relay set coil key : Set coil of K
- 
Output coil key : Set coil of Y, G, R, T, U, C(CU, CD, and CR), N(NZ and NM), Z, E, and P

### [3] Relay Function Partition Key

V AND	W OR	X EOR	Y NOT	Z MOD
Q MOV	R MOM	S MSI	T MDI	U SCL
L SCH	M ASR	N ASL	O LSR	P LSL
G DTB	H ASP	I ASU	J APB	K AUB

C	D	E	F
8	9	A	B
4	5	6	7
0	1	2	3

←(No. Input Key: Some keys double as Relay Function Partition Key.)

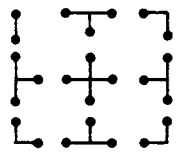








- |   |  |
|---|--|
| <p>X: External input</p> <p>Y: External output</p> <p>R: Internal register</p> <p>G: Global link register</p> <p>K: Keep relay</p> <p>T: Timer</p> <p>U: One shot</p> <p>C: Counter</p> | <p>N: Nesting relay</p> <p>Z: Z register</p> <p>E: Event register</p> <p>S: System register</p> <p>P: Process register</p> <p>V: Edge contact</p> <p>J: Transfer register</p> <p>Q: Receive register</p> |
|---|--|

# 4 FUNDAMENTALS OF PROGRAMMING

## Key Arrangement

COPY	END	SCREEN	SYS. LIST	COM. OUT	LIST	I/O SET	F1	F2	F3	F4	K/B1	K/B2	K/B3
LINE INS. ABS	LINE DEL. $\sqrt{\quad}$	BLOCK DEL. EXC	LAST	! =	# $\neq$	F/D >	FORCE ON $\geq$	FORCE OFF <	FORCE RESET $\leq$	DIANA +	STAT. -	NEST NO. SET X	MENU +
RE-PLACE PSH	DEL POP	SEARCH MAX	$\uparrow\downarrow$ MIN	FUNC $\left[ \begin{array}{c} \leftarrow \\ \rightarrow \end{array} \right]$ +/-	V AND	W OR	X EOR	Y NOT	Z MOD	C	D	E	F
I LIM	T SEG	$\lrcorner$ ROR	$\uparrow\uparrow$ ROL	$\text{---(R)---}$ DST	Q MOV	R MOM	S MSI	T MDI	U SCL	8	9	A	B
$\text{┌}$ BND	$\text{+}$ INI	$\text{└}$ DEC	$\text{≠}$ INC	$\text{---(S)---}$ AST	L SCH	M ASR	N ASL	O LSR	P LSL	4	5	6	7
$\text{└}$ ZON	$\text{┘}$ TST	$\text{┌}$ STD	$\text{┌┐}$ DTS	$\text{○}$ BTD	G DTB	H ASP	I ASU	J APB	K AUB	0	1	2	3
SHIFT	KANA		$\leftarrow$	$\rightarrow$	$\uparrow$	$\downarrow$	$\triangleleft$	$\triangleright$	$\blacktriangleright$	CNT CONTI	RTY RETRY	CLS CLOSE	SET

4.1.2 Outline of symbols

Partition	Symbol	Name	Description
Branch Class		Branch symbol	Branch symbol used for connecting the contacts and the coils A ladder circuit must be entered through this branch symbol. This symbol can be used for common line and - (AND) connection.
Relay Symbol		Edge contact (Falling)	The relay symbols are entered following the branch symbols. These symbols indicate coils and contact in the ladder circuit.
		Edge contact (Rising)	
		b contact	
		a contact	
		Data manipulation initiation coil	
		Keep relay reset coil	
		Keep relay set coil	
		Output coil	
Relay Function Partition	External	X	External input Shows the status of the input signal to each I/O.
		Y	External output Outputs the ON/OFF status of the function to the external equipment.

## 4 FUNDAMENTALS OF PROGRAMMING

Partition	Symbol	Name	Description	
Relay Function Partition	Internal Signal	R	Intermediate register	Auxiliary relay used within the PCs
		G	Global link register	Transfers data to and from other PCs through CPU-CPU linking.
		K	Keep relay	Holds a contact ON until the reset coil turns ON after the set coil turning ON.
		T	On-delay timer	Turns a contact ON a certain fixed time after the output coil turning ON.
		U	One shot	Turns a contact ON for a certain fixed period of time after the output coil turning ON.
		C	Counter	Counts the number of times when the output coil changes from off to on. When the number reaches a preset value, a contact is set to on.
		N	Nesting coil	Starts and stops a subroutine-like ladder program.
		Z	Z register	Coil for logic tracer
		E	Event register	When the output coil turns ON, the associated No. is shown on the PCs LED.
		S	System register	Register to reflect the operating status of the system (Contact, only)
		P	Process register	Starts and stops a computer mode program.
		V	Edge contact	Detects the rising or falling of an input pulse, turns ON for 1 scan.
		J	Transfer register	Register to communicate with a HI-FLOW program
Q	Receive register			



## 4 FUNDAMENTALS OF PROGRAMMING

### 4.1.3 Relay functions and range of No. input

Number keys are used to enter numerical data for each of the relay functions and preset values of coils using preset values. The following table contains the range of each function.

Register Name	Symbol	2 a , 2 a E, 2 a H	4 a	4 a H
External Input	X	000-7FF (2048 points)	000-1FF (512 points)	000-3FF (1024 points)
	XW	000-7F0 (128W)	000-1F0 (32W)	000-3F0 (64W)
External output	Y	000-7FF (2048 points)	000-1FF (512 points)	000-3FF (1024 points)
	YW	000-7F0 (128W)	000-1F0 (32W)	000-3F0 (64W)
Internal Register	R	000-7FF (2048 points)		
	RW	000-7F0 (128W)		
On-delay Timer	T	000-1FF (512 points)		
	TW	000-1F0 (32W)		
	TS	000-1FF (512W)		
	TC	000-1FF (512W)		
One Shot	U	000-0FF (256 points)		
	UW	000-0F0 (16W)		
	US	000-0FF (256W)		
	UC	000-0FF (256W)		
Up-down Counter	CU	00-FF (256 points)		
	CD	00-FF (256 points)		
	CR	00-FF (256 points)		
	C	000-0FF (256 points)		
	CW	000-0F0 (16W)		
	CS	000-0FF (256 points)		
	CC	000-0FF (256W)		
Keep Relay	K	000-1FF (512 points)		
	KW	000-1F0 (32W)		
Global Link Register	G	000-FFF (4096 points)		
	GW	000-FF0 (256W)		
Transfer Register	J	000-FFF (4096 points)	_____	
	JW	000-FF0 (256W)		
Receive Register	Q	000-FFF (4096 points)	_____	
	QW	000-FF0 (256W)		

## 4 FUNDAMENTALS OF PROGRAMMING

Register Name	Symbol	2 a , 2 a E, 2 a H	4 a	4 a H
Nesting Coil	NM	01-FF (255 points)	—	—
	NZ	01-FF (255 points)		
	N	001-0FF (255 points)		
	NW	000-0F0 (16W)		
Process Coil	P	001-080 (128 points)	—	—
	PW	000-080 (9W)		
Event Register	E	000-0FF (256 points)	—	—
	EW	400-FF0 (192W)	400-5F0 (32W)	400-7F0 (64W)
Edge Contact	V	000-7FF (2048 points)		
Z Register	Z	000-01F (32 points)	000-00F (16 points)	
System Register	S	000-BFF (3072 points)		
	SW	000-BF0 (192W)		
Function Data Register	FW	000-BFF (3072W)		
Function Work Register	DW	000-FFF (4096W)	000-7FF (2048W)	
Extended External Input	IW	000-FFF (4096W)	—	
Extended External Output	OW	000-FFF (4096W)	—	

In addition to the above number, the Z (register) contains Z200, Z0FE, Z0FF and provides the following functions:

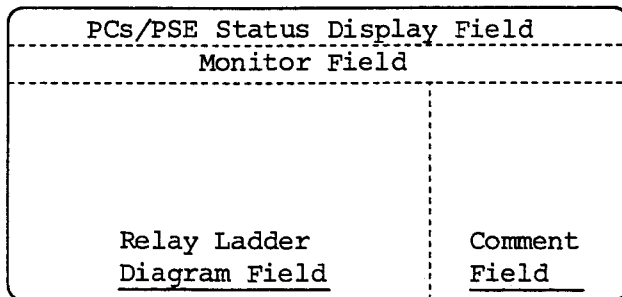
Z200 ... Exciting this coil causes an interrupt to H-7338  
 - ( ) - high-order linkage (ATT).  
     { 2α ... Pulse interrupt of 150 ms  
     { 4α ... Pulse interrupt follows the excitation of the  
        Z200 coil.

Z0FE ... When this coil is excited, the logic tracer function  
 - ( ) - starts.

Z0FF ... When this coil is excited, the logic tracer function  
 - ( ) - stops.

#### 4.1.4 PSE monitor screen format

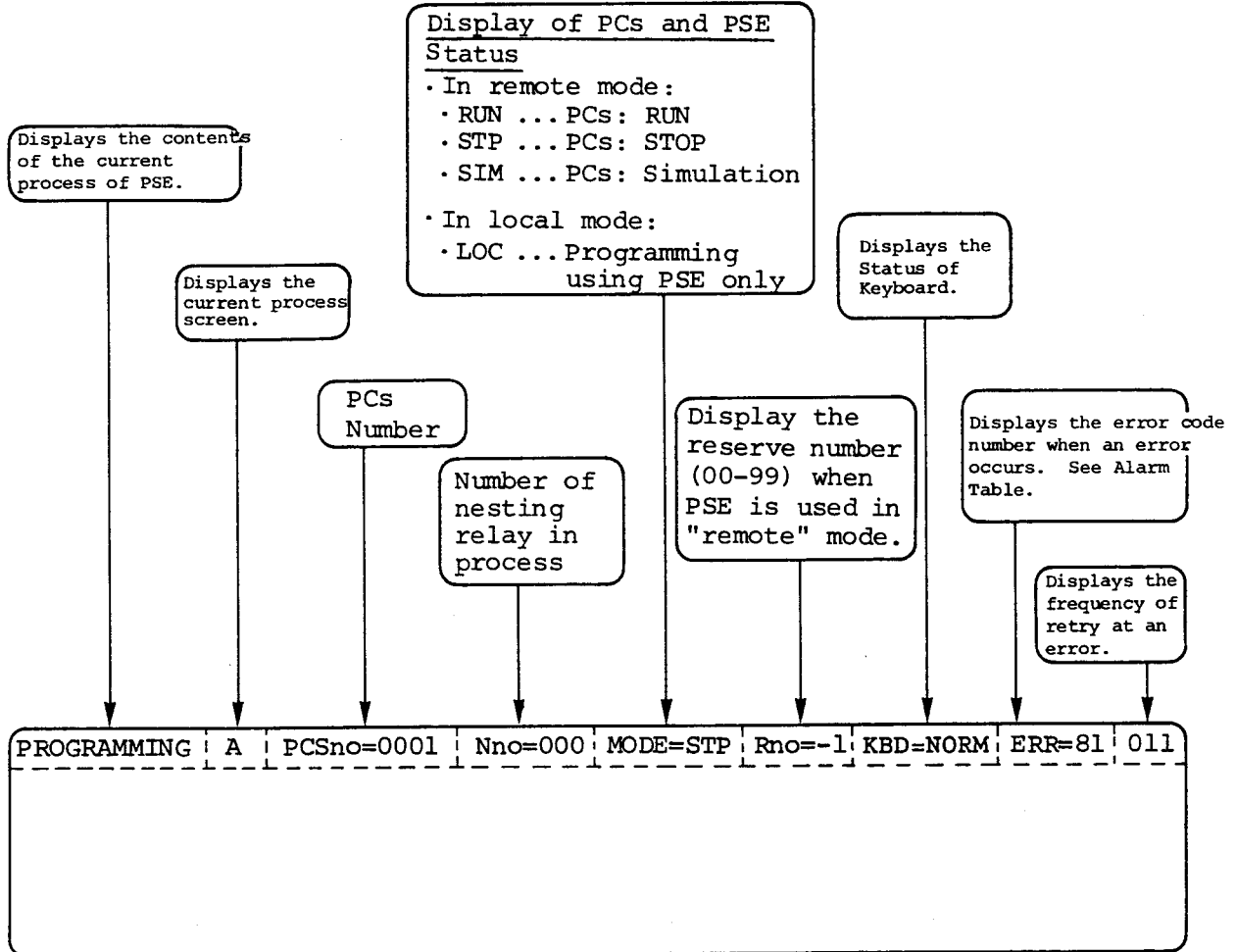
[Outline Configuration of Monitor Screen]



## 4 FUNDAMENTALS OF PROGRAMMING

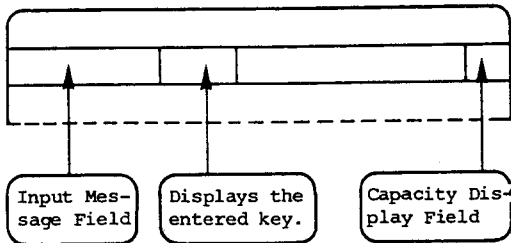
### 4.1.5 PCs/PSE status display field

The current status of PCs or PSE is shown as follows:



4.1.6 Monitor field

Request input from keyboard and displays the entered key.



• 「FUNC.OR S-PROG.KEY IN! ■」...  
 Displays the entered function and programming keys.

• 「KEYIN= ■」... .. Displays the entered programming key.

If ' **H** **X** **1** **0** **D** is entered, it is shown as follows:

[Example of Display in Monitor Field]

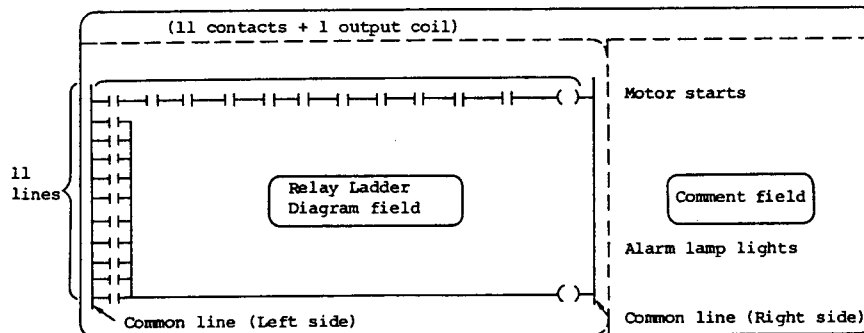
PROGRAMMING  
 KEY IN= H X 1 0 D

4.1.7 Relay ladder chart field and comment field

- A sequence program entered through the keyboard is displayed in the relay ladder diagram field.

[Horizontal: 11 contacts + 1 output coil]  
 [Vertical: 11 lines]

- A comment of up to 16 characters (V2 x H8) is displayed in the comment field. Also, this field displays the preset and accumulated values of T, U, and C, and the parameters to the data manipulations, etc.

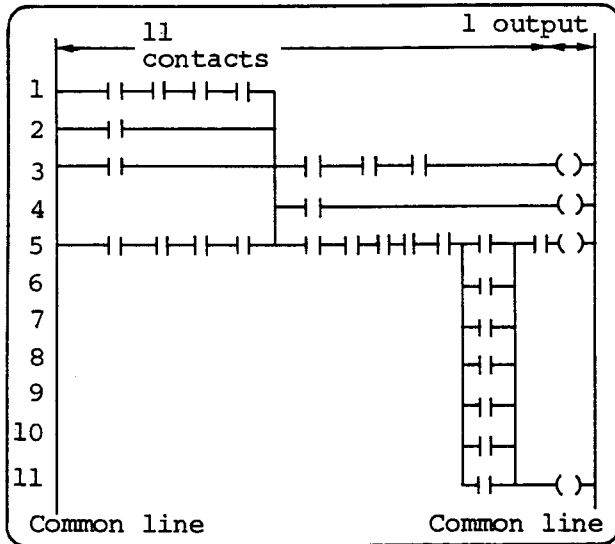


**\*NOTE:**  
 SET VALUES FOR T, U, AND C ARE DISPLAYED IN THEIR STATE WHEN PROGRAMMED, OR UPON FIRST ENTRY TO THE DYNAMIC MODE. A CHANGE IN THESE VALUES WILL NOT BE UPDATED DYNAMICALLY ON THE SCREEN.

## 4.2 Programming Grammar and Restrictions

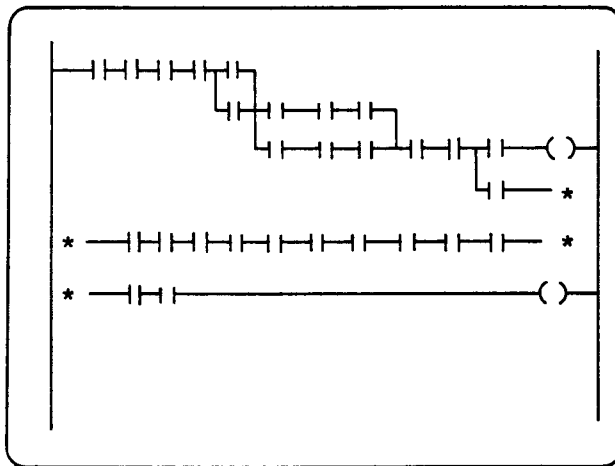
### 4.2.1 Size of ladder circuit

[Maximum Size of Block]



- One ladder circuit starts at the common line (left side) and ends with a coil connecting to the common line (right side). This sequence circuit is called a block, and the largest circuit of this in one block is: [Horizontal direction II contacts + 1 output coil vertical direction II lines] This is the maximum display size on a screen.

[Logical AND Connection and Loop back Circuit]



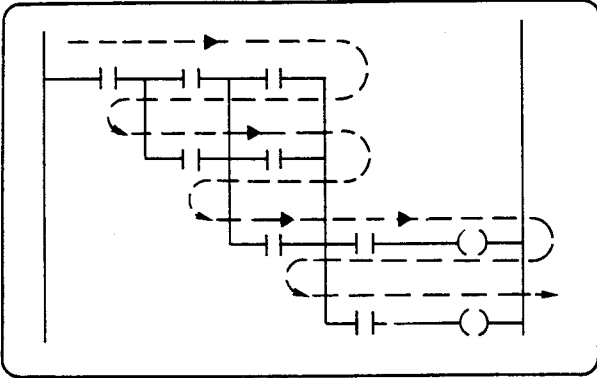
- When there are more than II contacts in series (logical AND) a loop back circuit is formed as shown in the figure.

[Restrictions]

- No branching allowed directly before an asterisk \*.
- No branch circuits allowed after an asterisk \*.
- Only a single branch can be looped back from an asterisk \*.

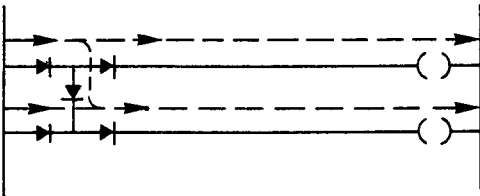
### 4.2.2 Right-down circuit and its working sequence

[Example of Right-Down Rule]



- The structure of a ladder circuit is formed left to right and top to bottom. Similarly, the circuit is created left to right and top to bottom.

[Conception of Operation Sequence]



Relay circuit showing implied diodes.

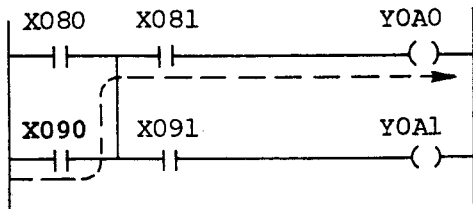
- Ladder circuits operate in the order of left to right and top to bottom. The circuit should be viewed as though diodes are in series with contacts and diodes are in downward branches. These are considered implied diodes.

## 4 FUNDAMENTALS OF PROGRAMMING

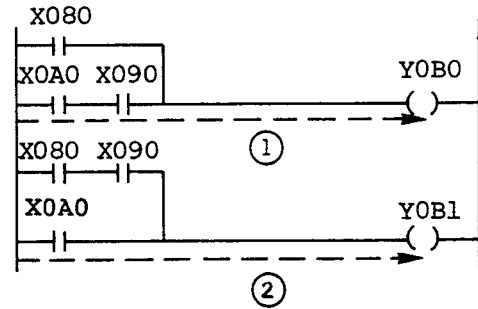
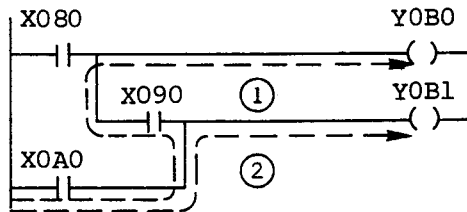
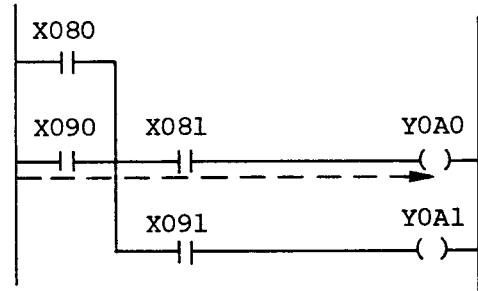
### [Operation of Right-Down Ladder Circuit]

To have the relay circuits operate as shown on the left side, form the right-down ladder circuits as shown on the right side.

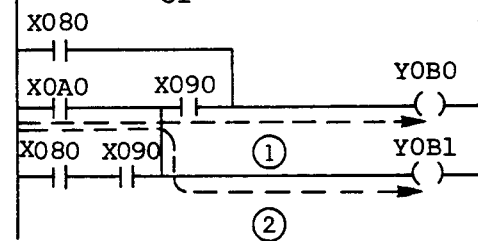
### [Example of Relay Circuit]



### [Example of Right-Down Ladder Circuit]



or

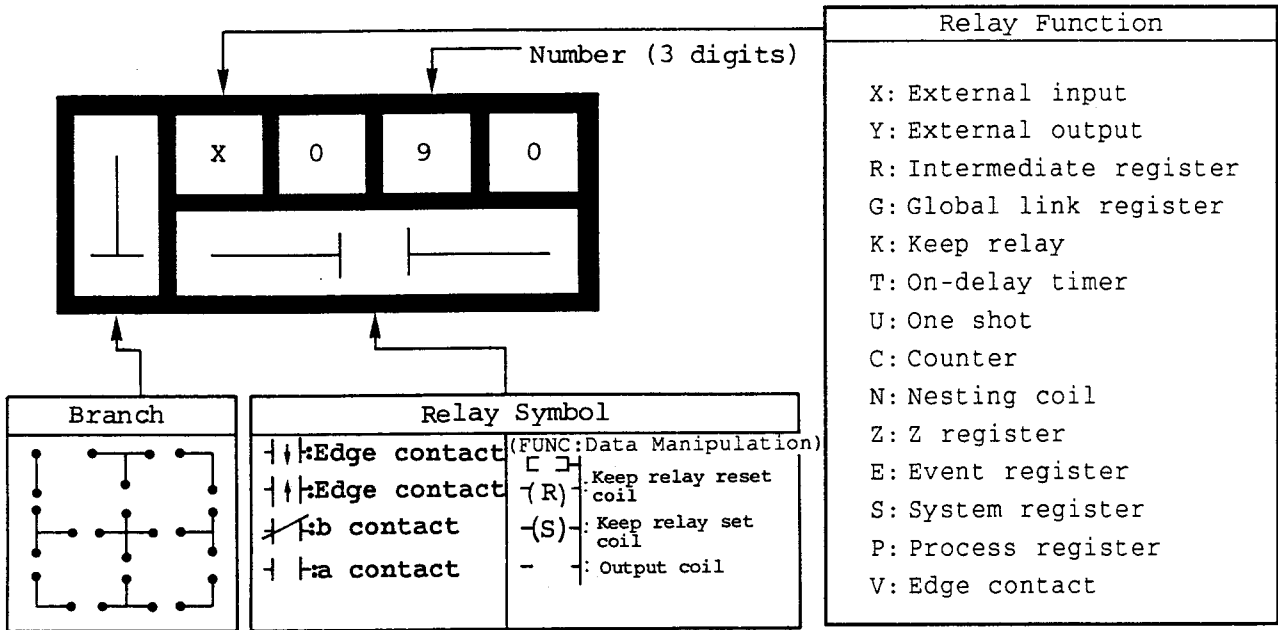




4.2.3 Ladder circuit and its steps

The structure of one step of the ladder circuit is as follows:

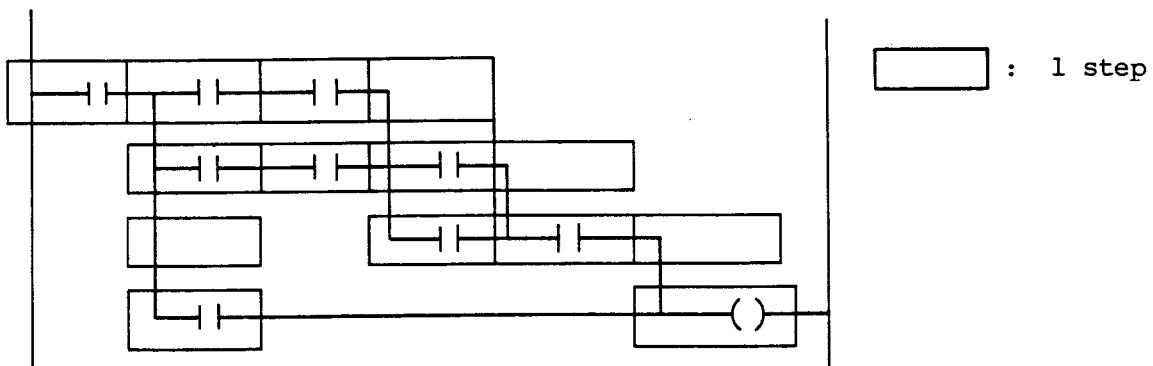
[Structure of 1 step]



The following diagram explains the relationship between a ladder circuit and the number of steps.

- . The branch instructions,  $\square \downarrow$ ,  $\square \uparrow$ , or  $\square \square$  are counted as one step containing only the branch partition.
- . One data manipulation uses a number of steps.

[Sequence Circuit and Instruction Symbology.]

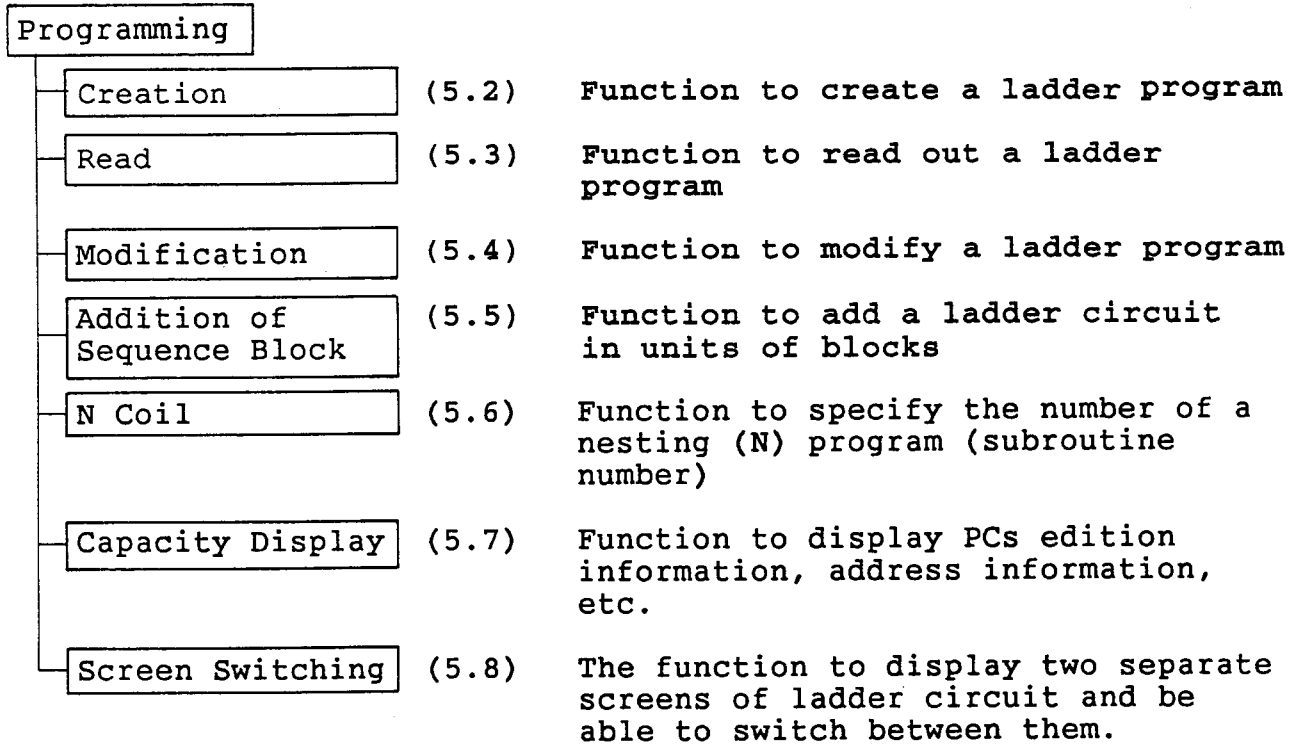


**THIS PAGE INTENTIONALLY LEFT BLANK.**

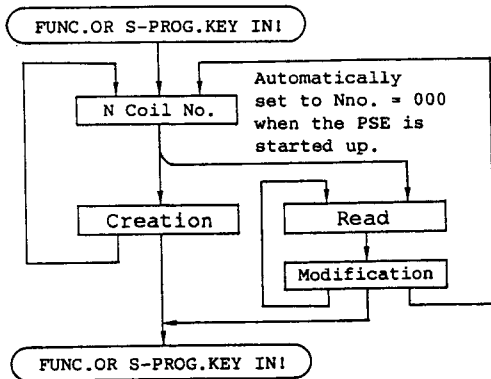
# **5 PROGRAMMING METHOD**

## 5.1 Functional Outline of Programming

### 5.1.1 Programming system



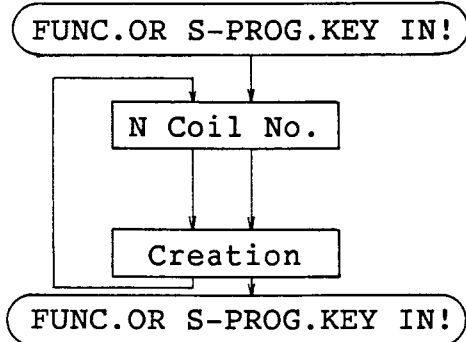
### 5.1.2 Flow of programming



- To create or modify a program in remote mode, set the associated PCs to STOP or In-Run Rewrite mode. (Set to PROT.OFF if the protect function is provided.)

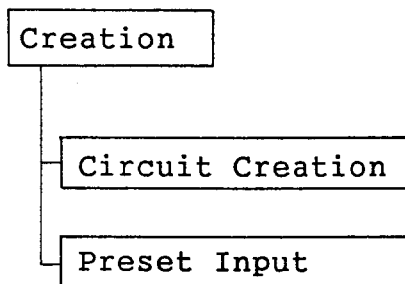
## 5.2 Creation

### 5.2.1 Schematic flow of creation procedure



- (1) Set the N coil number (N No.) to begin creating a ladder circuit. (See 5.6 N Coil Number.) Automatically set to N No.=000 when the PSE is started up. To change the number, enter NEST NO. SET  
   .
- (2) Create a ladder circuit.

### 5.2.2 Outline of creation



The ladder circuit is divided into circuit creation and preset input.

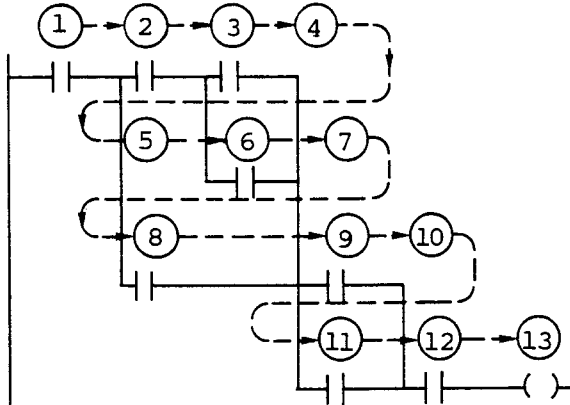
Create ladder circuits one block at a time.

Enter the T, U and C set points and parameters for data manipulation.

## 5 PROGRAMMING METHOD

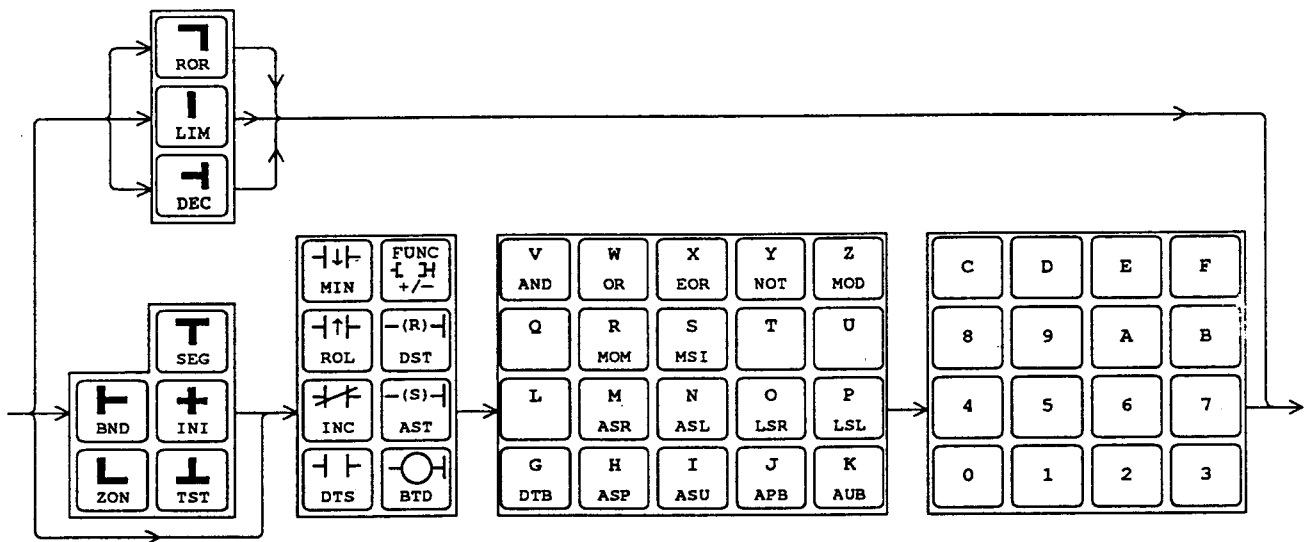
### 5.2.3 Outline of creation operation

#### (1) Input order of a ladder circuit



The ladder circuit is entered from left to right and top to bottom. ① -- ⑬ in the figure show the input sequence in entering a ladder circuit.

#### (2) Input order of sequence ladder instruction symbols



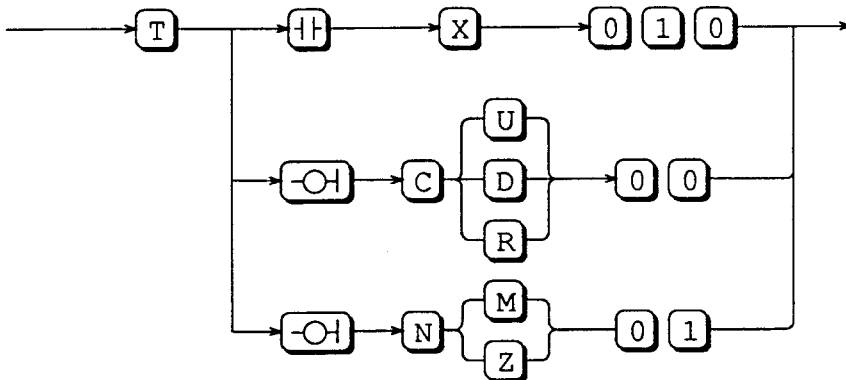
[Branch  
Partition]

[Relay  
Symbol]

[Relay  
Function]

[Number input]  
(Includes  
numeric portion  
of relay  
function.)

[Example]



Relay symbols are entered by the programming keys in the following order:

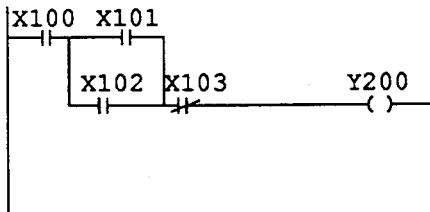
- o Branch partition key
- o Relay symbol partition key
- o Relay function partition key
- o Number input key

In the case of starting with a common line or in the case of AND connection (-), the branch partition key is not pressed. Or, when incorrect data is entered, press the **RTY** key, then enter the correct data.

## 5 PROGRAMMING METHOD

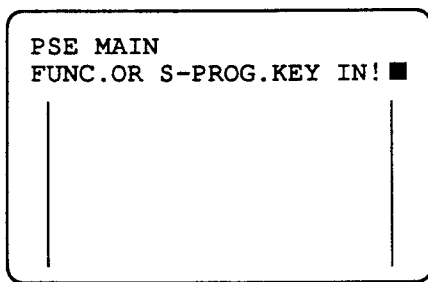
### 5.2.4 Sequence circuit block creation

- Creation of Circuit



The creation procedure is explained in the following from the example given on the left side.

[1]

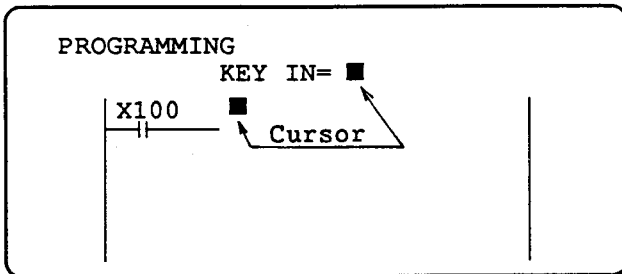


[1] Enter the first symbol of the ladder circuit.

⏏ X 1 0 0

- Starting at a common line, a "branch partition" is not entered before the contact.

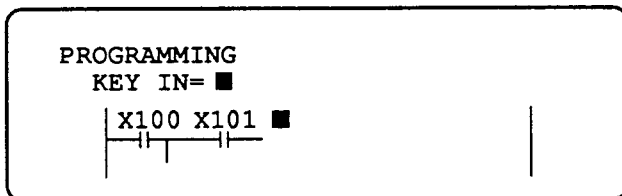
[2]



[2]

⏏ ⏏ X 1 0 1

[3]

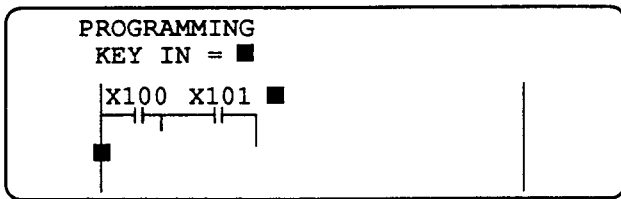


[3]

⏏



[4]

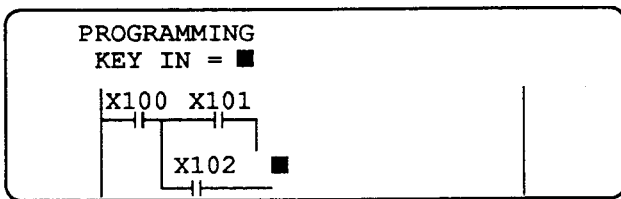


[4]

L X 1 0 2



[5]

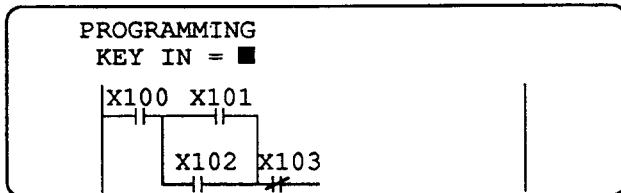


[5]

T X 1 0 3



[6]



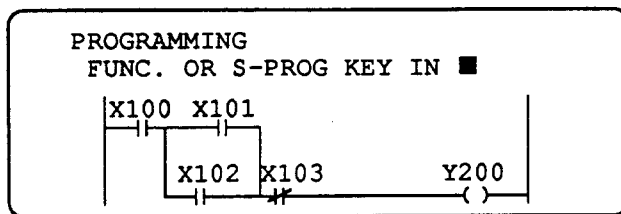
[6]

O Y 2 0 0

- In the case of AND connection "-", a branch is required, as indicated in this example.



[7]



[7]

One ladder block (rung) can be created by the operations mentioned above. Then create sequence blocks one by one.

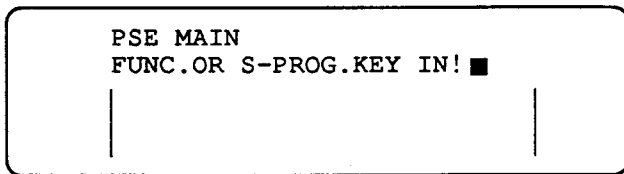
## 5 PROGRAMMING METHOD

### ● Creation of K (Keep Relay) circuit (Latch relay)



To enter the circuit shown in the figure, the procedures are as follows:

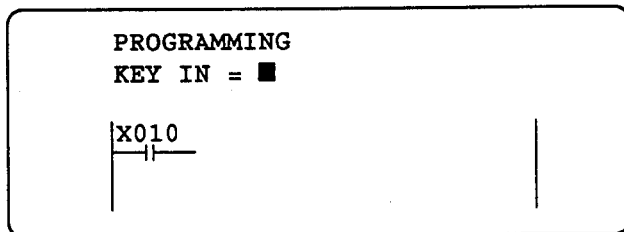
[1]



[1] Enter a contact, ( ) X010.



[2]

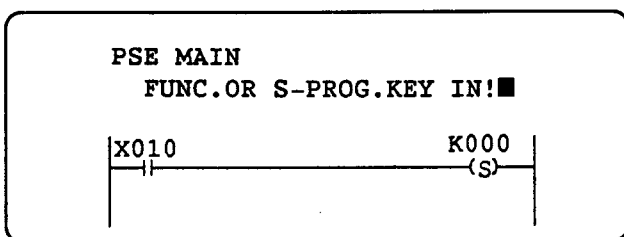


[2] Enter the set coil of the keep relay, "K000".

Enter  , if reset coil.

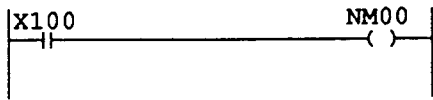


[3]



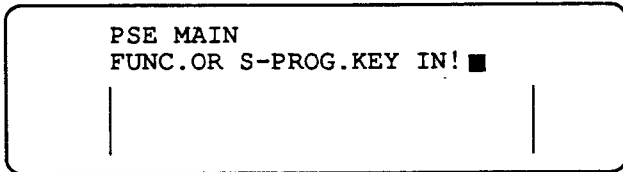
[3] One ladder block has been completed.

● Creation of N (Nesting Relay) circuit



To enter the circuit shown in the figure, the procedures for creating circuits are explained as follows:

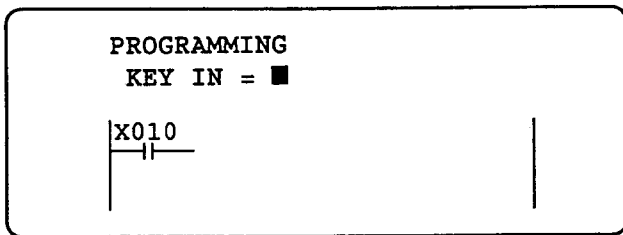
[1]



[1] Enter a contact, ( ) X010.



[2]

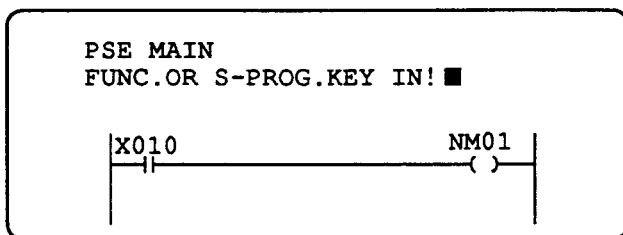


[2] Enter a nesting relay, "NM01" (Master Control).

Enter  when zone control.



[3]

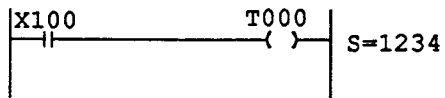


[3] One ladder block has been completed.

## 5 PROGRAMMING METHOD

### 5.2.5 Input of preset of coil with preset

- Input of preset for T, U, and C coils



When output coils of Timer (T), One shot (U) and Counter (C) are entered during sequence circuit creation, the PSE waits for preset value entry. Procedures for entering presets are explained as follows to enter the circuit shown in the figure.

[1]

PSE MAIN  
FUNC.OR S-PROG.KEY IN! ■

[1] Enter a contact, X100.

⊕ X 1 0 0



[2]

PROGRAMMING  
KEY IN = □

[2] Enter a set coil of the timer.

⊖ T 0 0 0



[3]

PROGRAMMING  
KEY IN = T000 = 0000: ■

Current  
value

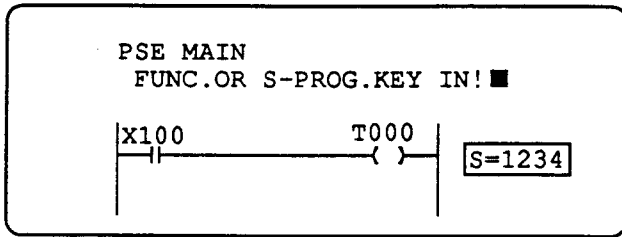
[3] Enter an optional preset.

Example: 1 2 3 4



[4]

[4] The preset has been entered.



- Display of preset and its contents

Preset Displayed	Timer(T)/One-Shot(U)	Counter(C)
0001	0.1 (sec.)	1 (times)
}	}	}
9999	999.9 (sec.)	9999 (times)

- The input for C (Counter) is as follows:

. Up Counter

C U 0 0

. Down Counter

C D 0 0

. Reset

C R 0 0

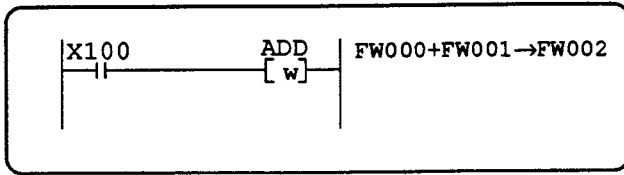
- In case of a contact, three numerals follow  C, such as  C  0  0  0.

- Entering set point

[Key input data]	[Preset]
<input type="radio"/> 5 <input type="radio"/> SET	0005
<input type="radio"/> 5 <input type="radio"/> 0 <input type="radio"/> SET	0005
<input type="radio"/> 0 <input type="radio"/> 0 <input type="radio"/> 5 <input type="radio"/> 0	0005
<input type="radio"/> CNT	Keeps the current value

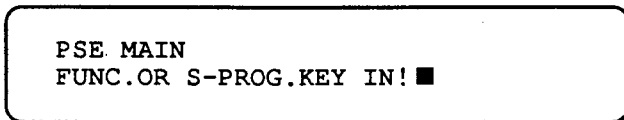
## 5 PROGRAMMING METHOD

### ● Entering parameters to data manipulations



When data manipulations are entered during ladder circuit creation, the PSE waits for parameter entry. Procedures for parameter entry are explained as follows to enter the circuit shown in the figure.

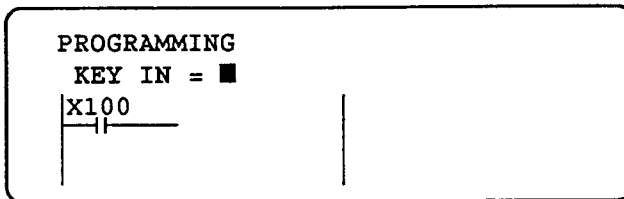
[1]



[1] Enter a contact, + X100.

+ X 1 0 0

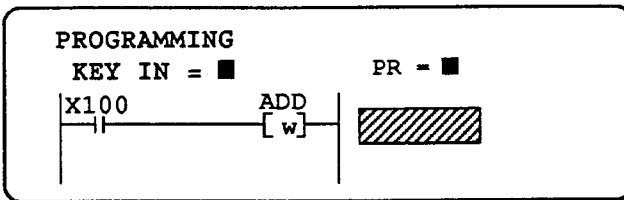
[2]



[2] Enter data manipulation, "ADD".

FUNC SHIFT + SET  
 FUNC A D D SET

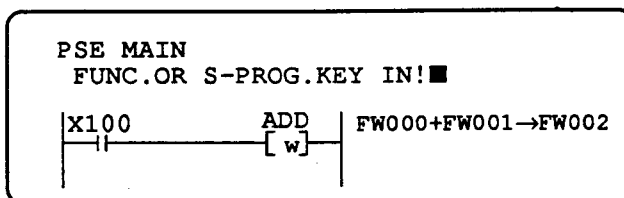
[3]



[3] Enter parameters.

F W 0 0 0  
 F W 0 0 1  
 F W 0 0 2

[4]



[4] Parameters have been entered.

5.2.6 Example of circuit creation

[Circuit being Created]	[Keyboard Input]
<p>Example 1:</p>	<p>① <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="0"/></p> <p>② <input type="button" value="H"/> <input type="button" value="R"/> <input type="button" value="0"/> <input type="button" value="1"/> <input type="button" value="6"/></p> <p>③ <input type="button" value="O"/> <input type="button" value="Y"/> <input type="button" value="0"/> <input type="button" value="5"/> <input type="button" value="A"/></p>
<p>Example 2:</p>	<p>① <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="2"/> <input type="button" value="0"/> <input type="button" value="0"/></p> <p>② <input type="button" value="L"/></p> <p>③ <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="2"/> <input type="button" value="0"/> <input type="button" value="1"/></p> <p>④ <input type="button" value="+"/> <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="2"/> <input type="button" value="0"/> <input type="button" value="2"/></p> <p>⑤ <input type="button" value="L"/></p> <p>⑥ <input type="button" value="L"/> <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="2"/> <input type="button" value="0"/> <input type="button" value="3"/></p> <p>⑦ <input type="button" value="T"/> <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="2"/> <input type="button" value="0"/> <input type="button" value="4"/></p> <p>⑧ <input type="button" value="L"/></p> <p>⑨ <input type="button" value="L"/> <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="2"/> <input type="button" value="0"/> <input type="button" value="5"/></p> <p>⑩ <input type="button" value="L"/> <input type="button" value="O"/> <input type="button" value="Y"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="0"/></p>
<p>Example 3:</p>	<p>① <input type="button" value="H"/> <input type="button" value="Y"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="5"/></p> <p>② <input type="button" value="O"/> <input type="button" value="Y"/> <input type="button" value="0"/> <input type="button" value="5"/> <input type="button" value="A"/></p> <p><input type="button" value="5"/> <input type="button" value="0"/> <input type="button" value="SET"/></p>

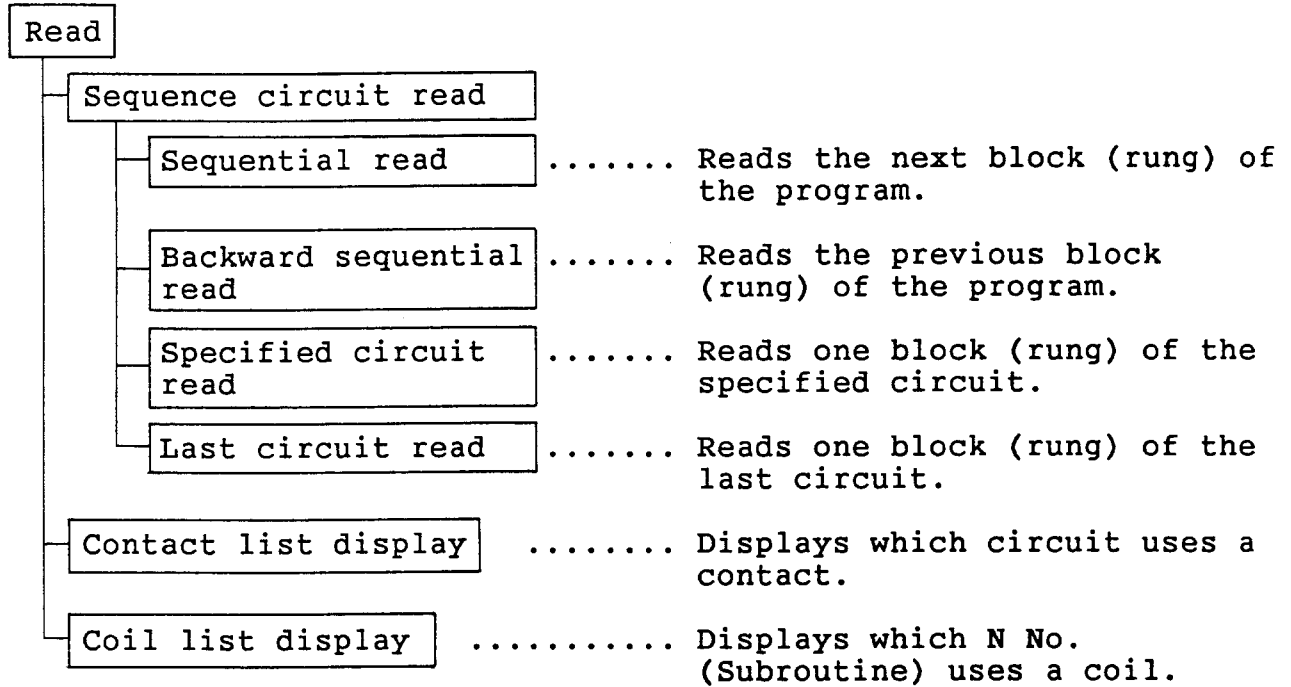
# 5 PROGRAMMING METHOD

[Circuit being Created]	[Keyboard Input]
<p>Example 4:</p>	<p>① <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="0"/></p> <p>② <input type="button" value="┘"/></p> <p>③ <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="2"/></p> <p>④ <input type="button" value="┘"/></p> <p>⑤ <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="4"/></p> <p>⑥ <input type="button" value="+"/> <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="3"/></p> <p>⑦ <input type="button" value="O"/> <input type="button" value="Y"/> <input type="button" value="2"/> <input type="button" value="0"/> <input type="button" value="0"/></p> <p>⑧ <input type="button" value="L"/> <input type="button" value="H"/> <input type="button" value="X"/> <input type="button" value="1"/> <input type="button" value="0"/> <input type="button" value="3"/></p> <p>⑨ <input type="button" value="O"/> <input type="button" value="R"/> <input type="button" value="0"/> <input type="button" value="1"/> <input type="button" value="0"/></p>



### 5.3 Read

#### 5.3.1 Outline of read processing



During sequential read or backward sequential read, circuits are cyclically read as follows;

(Sequential read): Last circuit → (N No. Top) → First circuit

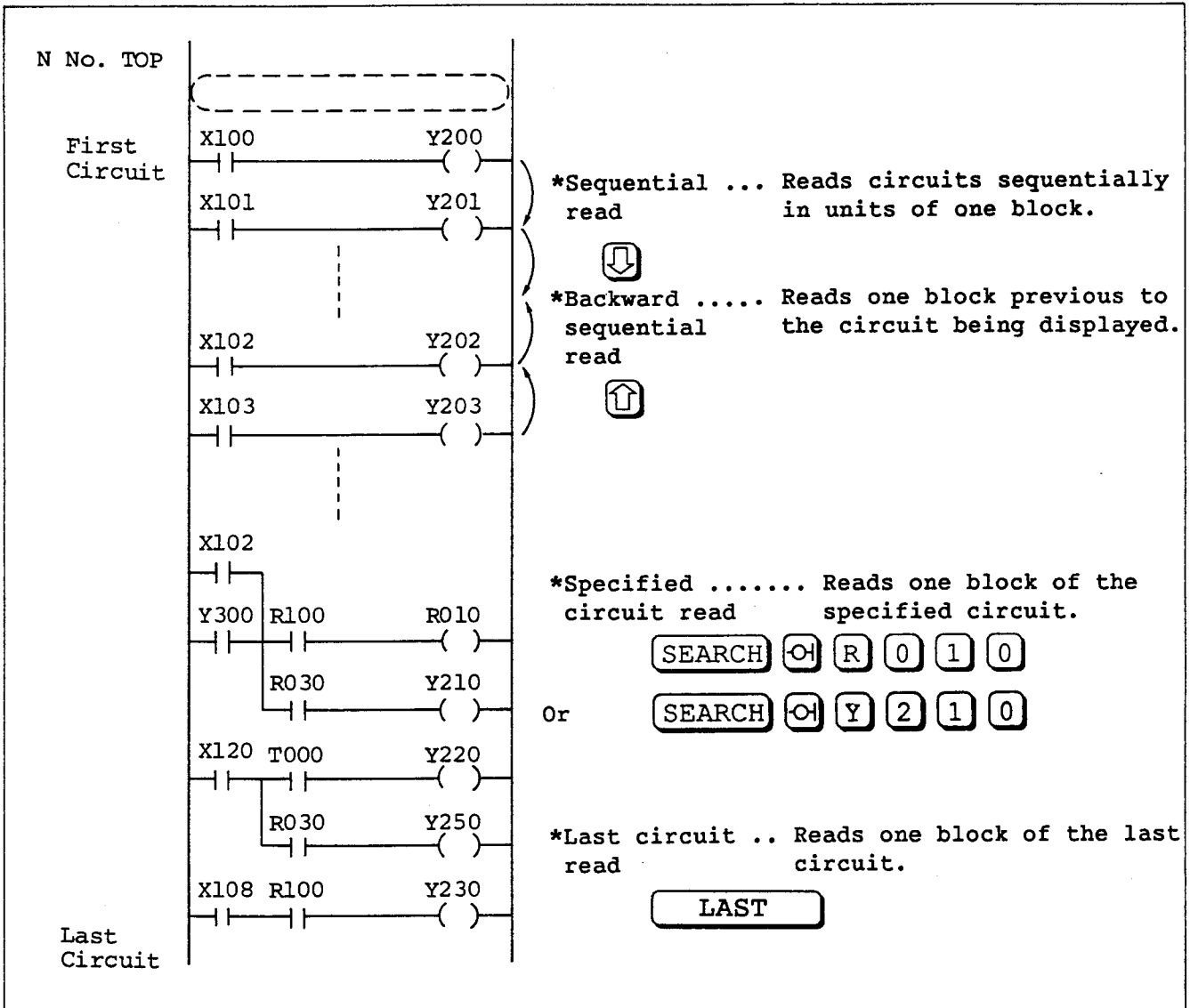
(Backward sequential: First circuit → (N No. Top) → Last circuit circuit)

**NOTE:**

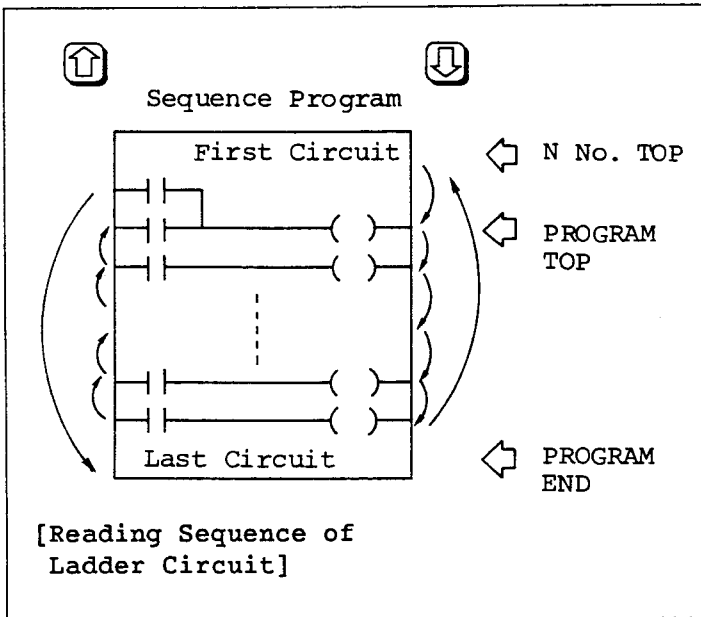
TO VIEW THE SEQUENTIAL ORDER OF THE LOGIC, DO NOT CHANGE BETWEEN UP AND DOWN CURSOR DIRECTION. IT IS POSSIBLE TO CLEAR THE SCREEN BY RE-ENTERING THE NEXT NUMBER USING "NEXT NUMBER SET".

# 5 PROGRAMMING METHOD

## (Types of Sequence Circuit Read)



5.3.2 Sequential read and backward read



**Sequential Read key**  
Reads the next block in ladder after the last block currently displayed.



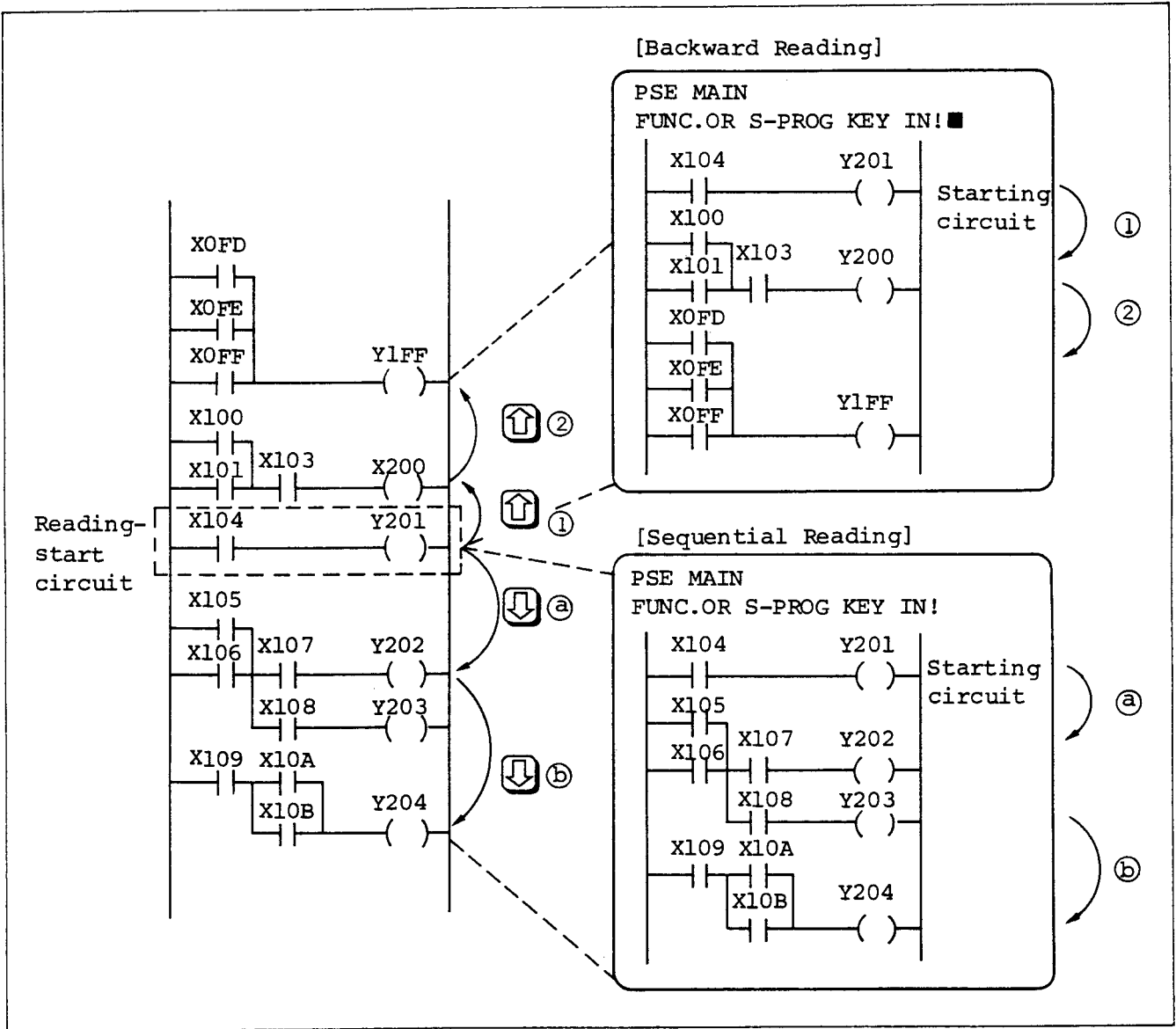
**Backward Read key**  
Reads the previous block in ladder before the last block currently displayed.

The ladder circuit blocks are read in sequential order so that the first block (Program Top) is read following the last block (Program End).

- **N No. Top**  
Shows the head of the current Nest (subroutine) before the first block. If a block is created when N No. top is displayed it is placed in the empty area before the present first block, and becomes the new first block.

## 5 PROGRAMMING METHOD

The effect of sequential and backward reads on the display screens is shown below:



5.3.3 Specified circuit read

If an output coil is specified by the **SEARCH** key, the one block which contains the coil is displayed.

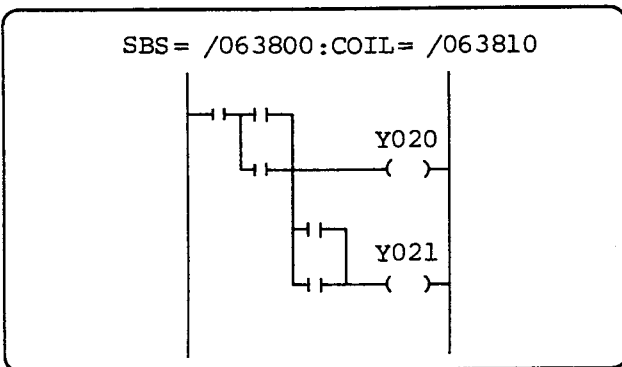
Example: Display the ladder circuit block (⇨ Y020)

[1]

PSE MAIL  
FUNC.OR S-PROG.KEY IN!■



[2]



[1] Enter **SEARCH** ⇨ **Y** **0** **2** **0**

To search for a data manipulation parameter:

**SEARCH** **D** **W** **0** **0** **0**

To search for a data manipulation:

**SEARCH** **FUNC** **SHIFT** **+** **SET**

[2] The circuit block is displayed in the ladder diagram field as shown in the figure.

The address of the specified coil and the SBS address are also shown on the screen in the format:

"SBS=/\*/\*/\*/\*/\*/\*/\*/\*:COIL=/\*/\*/\*/\*/\*/\*/\*/\*"

• **SBS** (Sequence Block Start)

Indicates the beginning of the first block in the ladder program.

## 5 PROGRAMMING METHOD

---

### 5.3.4 Last circuit read

If the **LAST** key is pressed, the last circuit of the currently specified Nest (subroutine) is displayed.

Example: Display the last circuit.

[1]

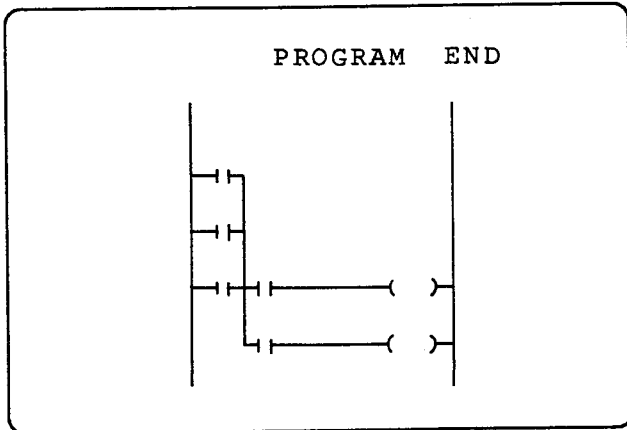
[1] Press the **LAST** key.

```
PSE MAIN
FUNC.OR S-PROG.KEY IN!■
```



[2]

[2] As shown in the figure, the last circuit block is displayed in the ladder block field, and the PSE waits for a function key entry.



The message "PROGRAM END" is displayed on the upper right of the screen, and indicates that the circuit block that has been displayed is the last one.

5.3.5 Contact cross reference

The contact cross reference display indicates the ladder circuit blocks that use the specified contact. After pressing the **LIST** key, enter the desired contact for the list display.

Example: Display the cross reference list of  $\uparrow$  R 0 0 0.

[1] [1] Press **LIST**  $\uparrow$  **R** **0** **1** **0**.

PSE MAIN  
FUNC.OR S-PROG.KEY IN! ■

[2]



Contact name

\*\*\*\* SWITCH CROSS REFERENCE LIST \*\*\*\*

→R 0 0 0

N000=  $\uparrow$  R001  $\uparrow$  Y020  $\uparrow$  P030  $\uparrow$  P030  $\uparrow$  Y013  $\uparrow$  Y014

N000=  $\uparrow$  Y011  $\uparrow$  G202  $\uparrow$  R015  $\uparrow$  R016  $\uparrow$  Y017  $\uparrow$  Y019  $\uparrow$  R01A

Name of the output coil of the  
ladder circuit block using  $\uparrow$  R000 or  $\uparrow$   
R000 within each Nest (subroutine)

N No. (N coil No.)



[2]

As shown in the figure, the PSE displays the output coil name of the sequence block where  $\uparrow$  R 0 0 0 and  $\uparrow$  R 0 0 0 are used and in which N No. (Nest, Subroutine). The PSE waits for the next function key input. If all coil names will not fit on the screen, the PSE to item (3).

[3] [Display when the screen is full.]

PSE MAIN  
KEY IN! ■ (CLS/CNT)



[3] If there is more data than will fit on the screen, KEY IN ! ■ [CLS/CNT] appears on the screen.

**CNT** ... Displays the subsequent listing.

**CLS** ... Ends this process, and returns to "PSE Main".

## 5 PROGRAMMING METHOD

[PSE Main Screen]

```
PSE MAIN
FUNC.OR S-PROG.KEY IN! ■
```

- Independent of whether an "A" or "B" contact is entered as the contact symbol, the data displayed is the same.
- After processing is completed, the screen is not cleared. The user can immediately perform programming, etc. from the screen in this state.

### 5.3.6 Output coil cross reference

The output coil cross reference displays the N No. (Nest, Subroutine) that use the specified output coil. Enter the desired coil name for list display after pressing the **LIST** key.

Example: Display the cross reference list of  $\text{---} \text{Y} 0 \text{C} 8$  .

[1]

[1] Press **LIST** **Y** **0** **C** **8** .  
(Coil name)

```
PSE MAIN
FUNC.OR S-PROC.KEY IN! ■
```

To display the cross reference list for data manipulation parameters:

Press **LIST** **D** **W** **0** **0** **0** .

To display the cross reference list for data manipulations:

Press **LIST** **FUNC** **SHIFT** **+** **SET**

[2]

```
**** COIL CROSS REFERENCE LIST ****
      Specified coil name
      ↓
→ Y0C8
      N000          N005
      [N No. using the specified coil]
```

[2]

As shown in the figure, the PSE displays the N No. (Nest, subroutine) where the output coil  $\text{---} \text{Y} 0 \text{C} 8$  is used. The PSE then waits for a function key input. If the list will not fit on the screen, then goes to item (3).



[3] [Display when the screen is full.]

```
PSE MAIN
KEY IN!■ (CLS/CNT)
```

[3] If there is more data than will fit on the screen, KEY IN ! ■ [CLS/CNT] appears on the screen.

**CNT** ... Displays the subsequent listing.

**CLS** ... Ends this process, and returns to "PSE Main".

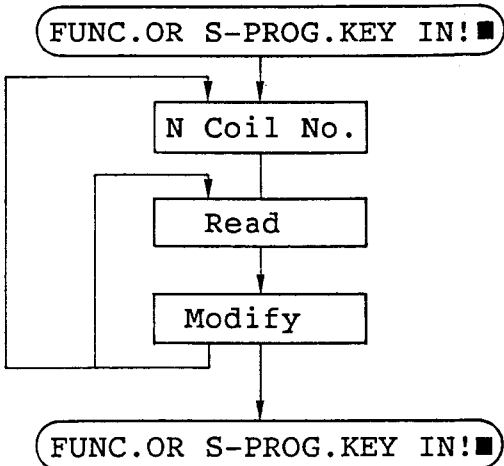
[PSE Main Screen]

```
PSE MAIN
FUNC.OR S-PROG.KEY IN!■
```

• After processing is completed, the screen is not cleared. The user can immediately perform programming, etc. from the screen in this state.

## 5.4 Modification

### 5.4.1 Schematic flow of modification procedure



(1) Enter the N No. (Nest, subroutine) which contains a ladder circuit to be modified. When the PSE is started up, it defaults to N No.=000 automatically. To change this number, enter a 3 digit number (000--OFF), such as **N COIL No.**  
   .

The last part of each N No. is displayed.

(2) Read a ladder circuit to modify.

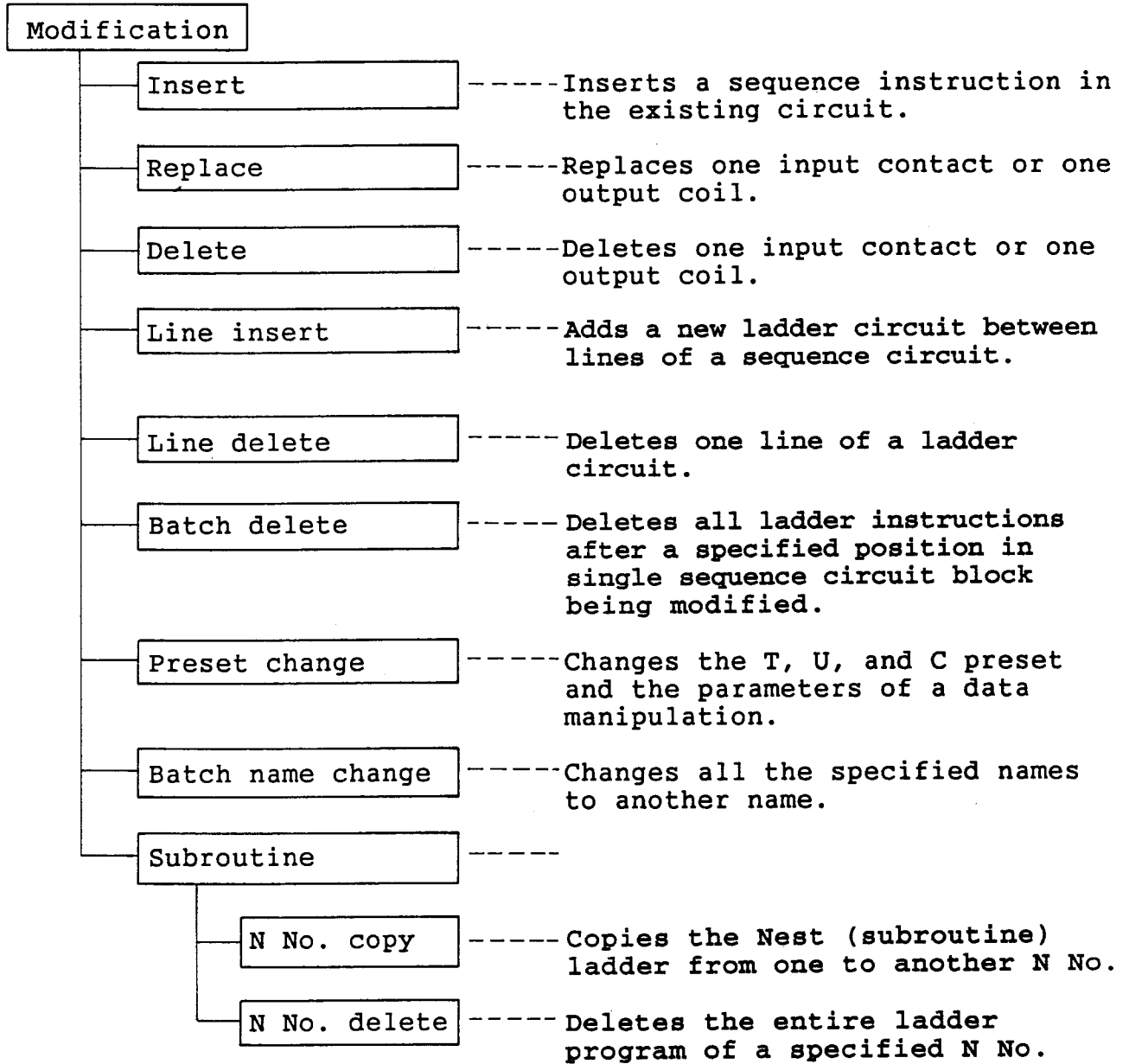
(3) Modify the circuit.

## 5 PROGRAMMING METHOD

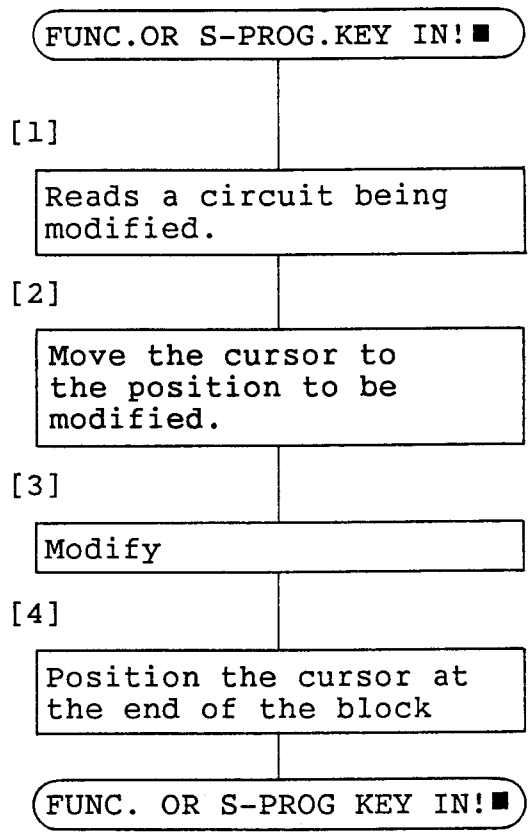
---

### 5.4.2 Outline of modification

The instruction words of a ladder circuit can be replaced, deleted, or inserted. The following modifications are possible:

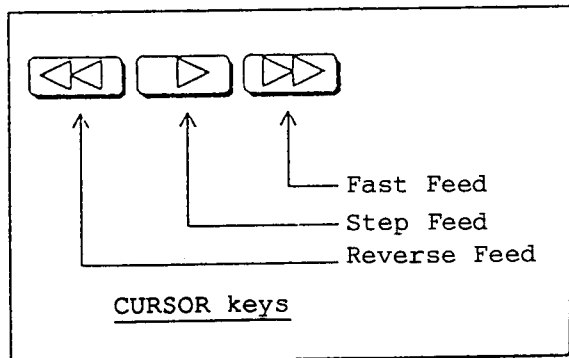


5.4.3 Modification procedure

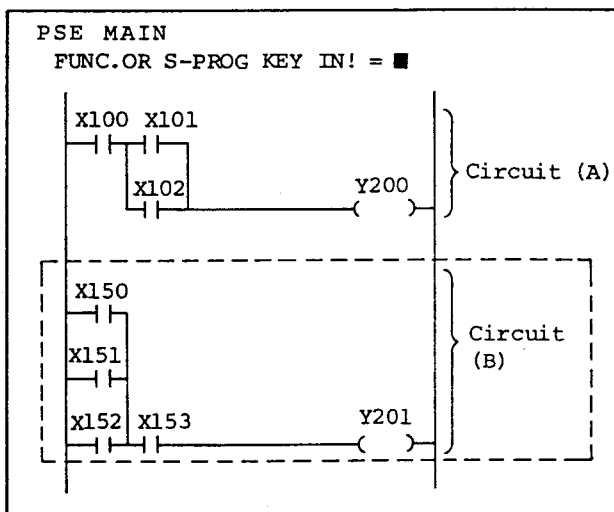


Modify the ladder circuit by following the procedure shown below.

- [1] Read a circuit being modified.
- [2] Move the cursor to the position to be modified by using the CURSOR keys.
- [3] Modify correctly.
- [4] Move the cursor to the end of the block by using the CURSOR keys.



[Position of Circuit to be Modified]



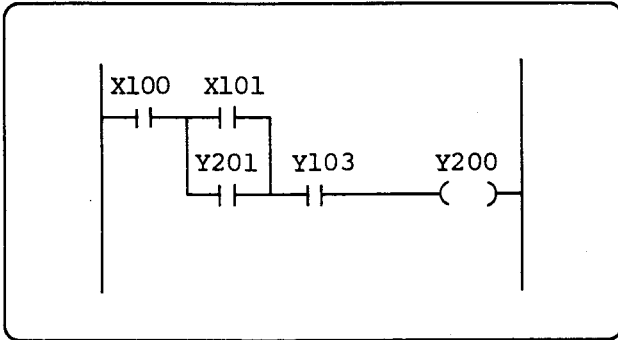
Only the latest ladder circuit displayed at the bottom of the screen can be modified. In this figure, only circuit block (B) can be modified. To modify circuit block (A) use the circuit read keys to display circuit block as the latest block at the bottom of the screen then modify it.


## 5 PROGRAMMING METHOD

### 5.4.4 Insertion

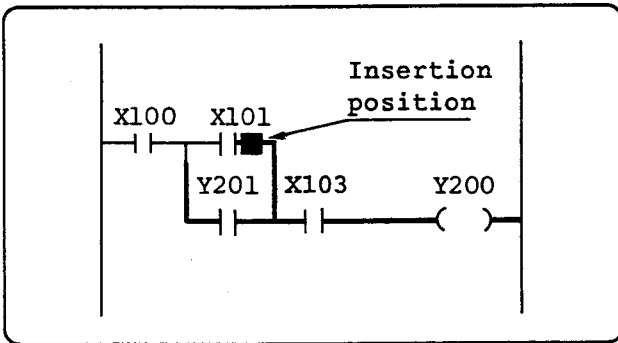
A ladder circuit instruction word may be inserted into a sequence circuit as follows:

[1]



[1] Read the desired ladder circuit, and then move the cursor to the insertion position by pressing the  key.

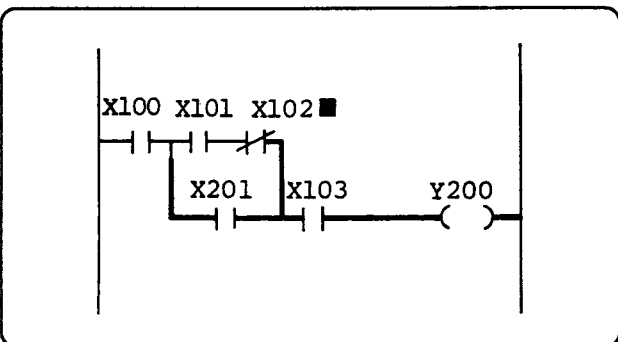
[2]




[2] Enter a desired instruction word.

Example:     

[3]

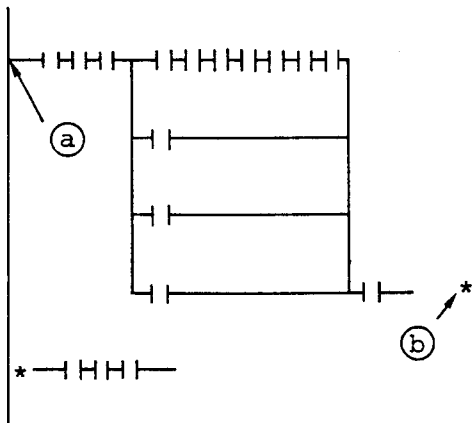
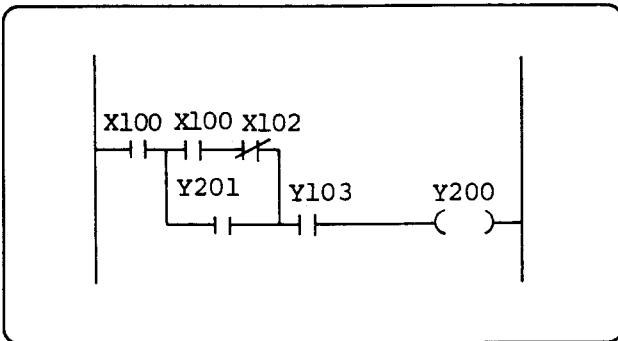


[3] Position the cursor at the end of the block by pressing the  key.



[4]

[4] The insertion is completed, and the PSE waits for a function key entry.



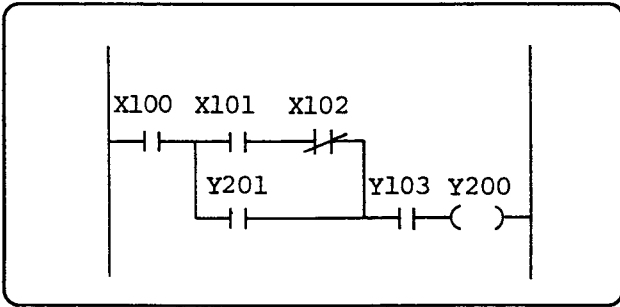
- When an output coil is inserted, the portion after the modification position in that line is erased, being replaced with the output coil.
- If during modification an attempt is made to insert more than 11 contacts across the user will get an error message and the contact will not be inserted.
- Insertion on the common line produces the same result as replace. (a)
- Insertion at a folding mark (\*) produces the same result as replace. (b)

## 5 PROGRAMMING METHOD

### 5.4.5 Replacement

Replace the ladder circuit by following the procedure shown below.

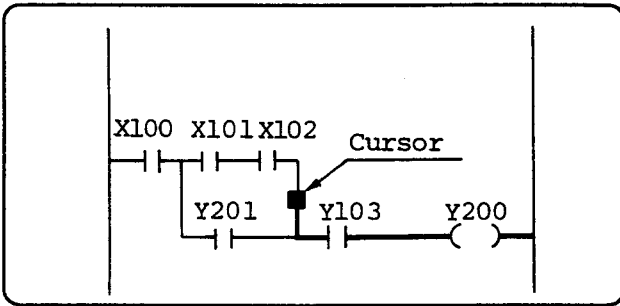
[1]



[1] Read the desired ladder circuit, and move the cursor to position to be replaced by pressing the key.



[2]



[2] Enter data, using the **REPLACE** key.

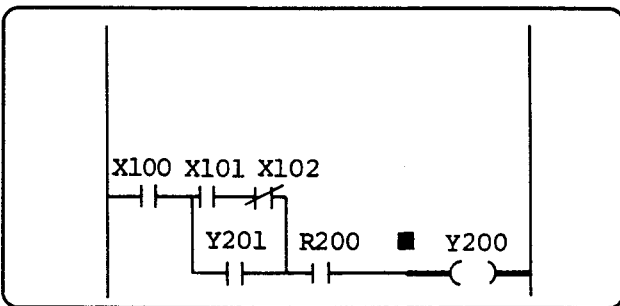
Example:

**REPLACE** **R** **2** **0** **0**

Only required when part of the step to be replaced.



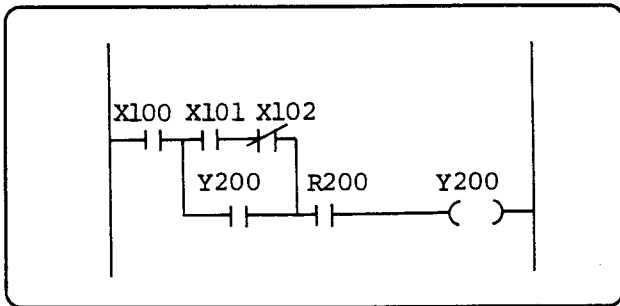
[3]



[3] Move the cursor to the end of the block by the key.



[4]

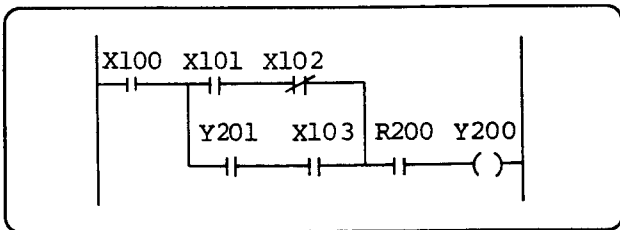



[4] The replace is completed, and the PSE waits for a function key entry.

### 5.4.6 Deletion

Delete the ladder circuit by following the procedure shown below.

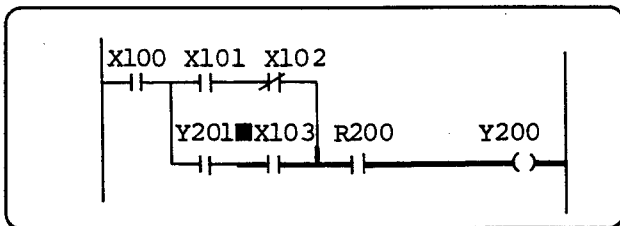
[1]




[1] Reads the desired ladder circuit, and move the cursor to the position to be deleted by pressing the  key.



[2]

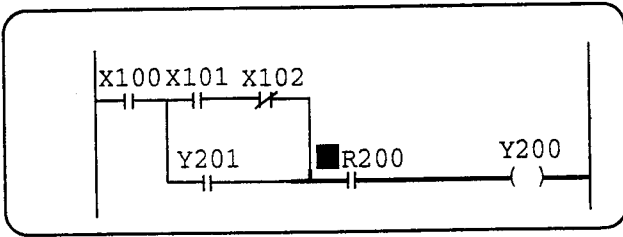


[2] Press the  key.

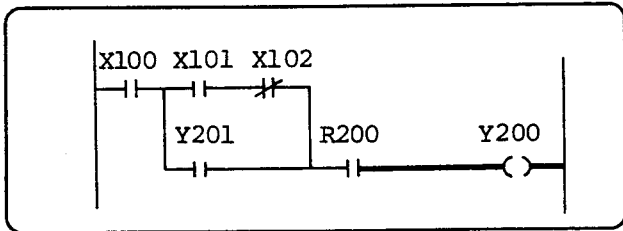



## 5 PROGRAMMING METHOD

[3]

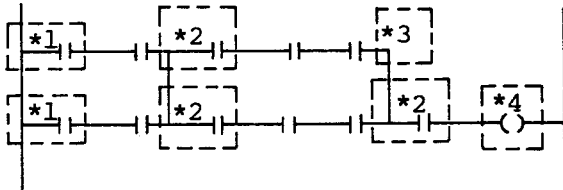


[4]



[3] Move the cursor to the end of the block by the  key.

[4] The deletion is completed, and the PSE waits for a function key entry.



● Notice that the following positions cannot be deleted. Refer to the figure.

\*1: Left end of a ladder circuit

\*2: Position with a branch.

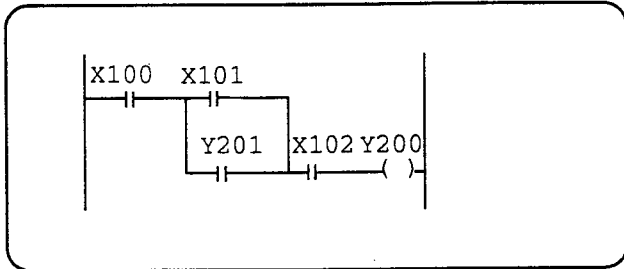
\*3 and \*4: Right end of each line of a ladder circuit.




5.4.7 Line Insertion

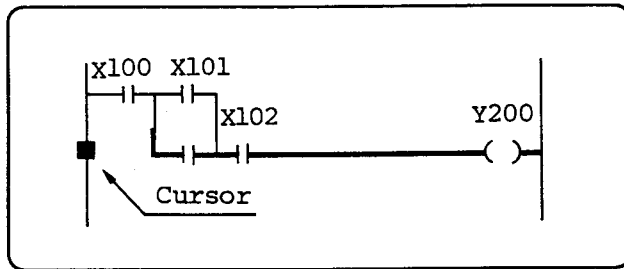
Adding a circuit between lines of a ladder circuit (Addition of logical OR condition)

[1]



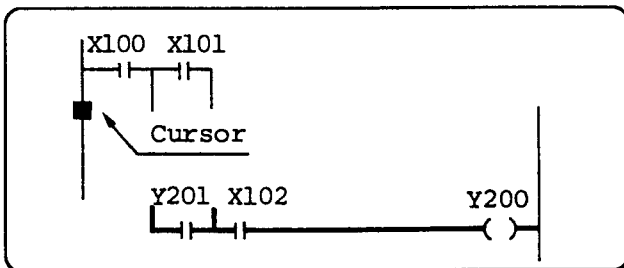
[1] Reads the desired ladder circuit, and then position the cursor to the left common line of the line below where the new is to be inserted using the  key.

[2]



[2] Press the  key.

[3]



[3] Add a circuit.

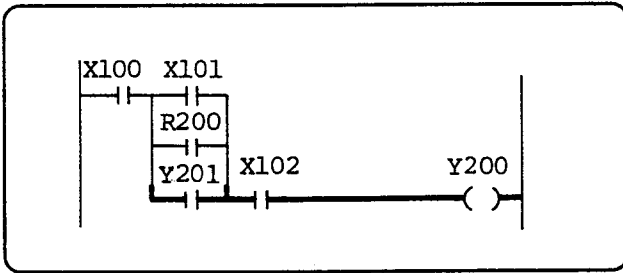
Example:

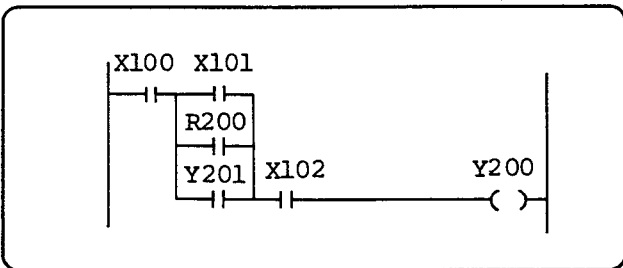



## 5 PROGRAMMING METHOD

[4]

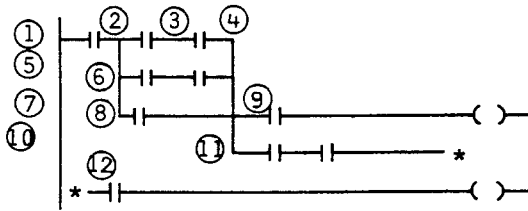


[5]



[4] Move the cursor to the end of the block using the  key.

[5] The Line Insert is completed, and the PSE waits for a function key entry.



• Notice that a line cannot be inserted in the following cases:

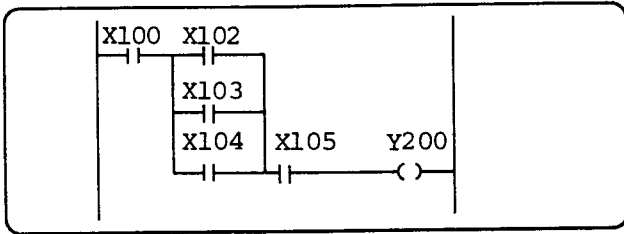
- (a) Start line of a ladder circuit block.
- (b) Cursor is not on the left common line.
- (c) A line with "\*" mark is on the left side.


In the figure shown insertion is permitted only when the cursor is at ⑤ ⑦ or ⑩ .

5.4.8 Line deletion

Deletion of a ladder circuit line

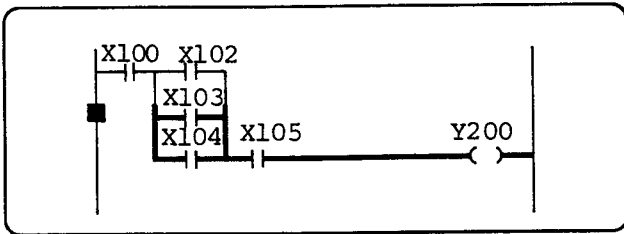
[1]



[1] Reads the desired ladder circuit, and position the cursor to the left common line at the line to be deleted by pressing the  key.



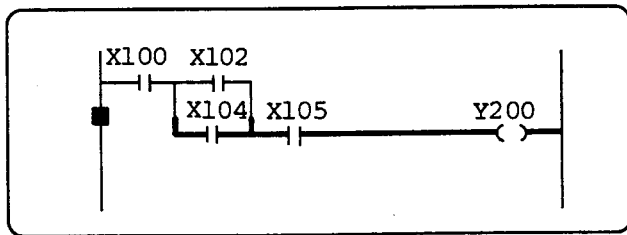
[2]



[2] Press the **LINE DEL.** key.



[3]

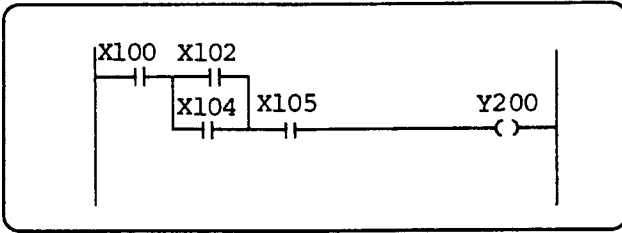


[3] Move the cursor to the end using the  key.

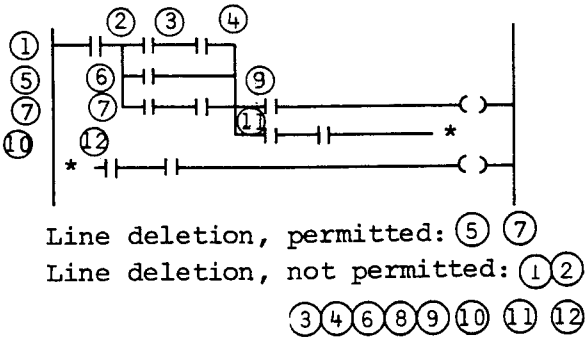


## 5 PROGRAMMING METHOD

[4]



[4] The line deletion is completed, and the PSE waits for a function key entry.



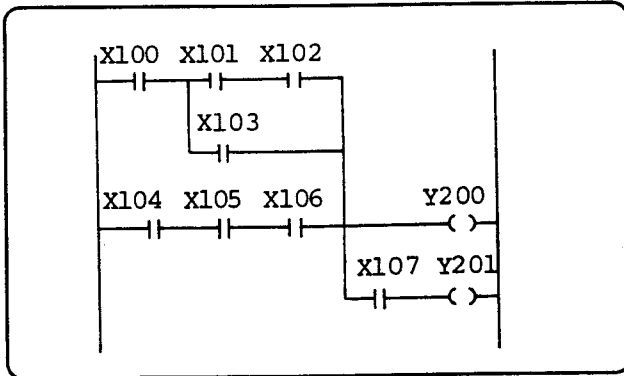
• Notice that a line cannot be deleted in the following cases:


- (1) Cursor is not on the left common line
- (2) A line with "\*" mark
- (3) Start line of a ladder circuit block

### 5.4.9 Batch deletion

Batch deletion deletes the portion the part of the ladder circuit block from the cursor to the end of the block.

[1]

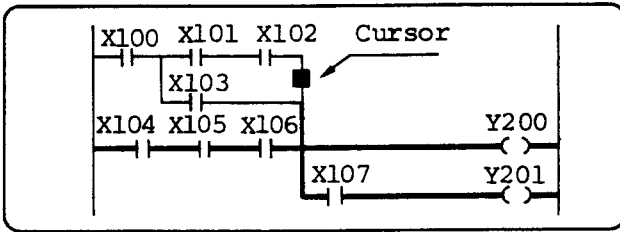


[1] Read the desired ladder circuit, and then move the cursor to the head of the part to be deleted by pressing the  key.



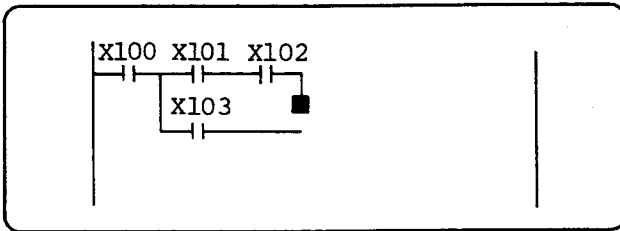
[2]

[2] Press the **BLOCK DEL** key.



[3]

[3] Enter a modifying circuit.

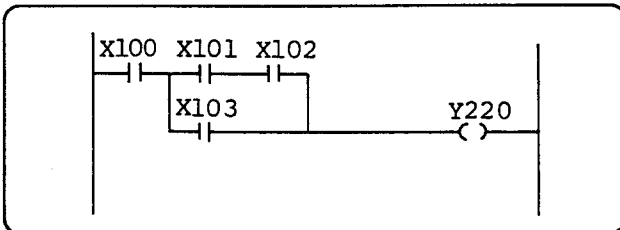


Example:



[4]

[4] The Batch deletion is completed, and the PSE waits for a function key entry.



## 5 PROGRAMMING METHOD

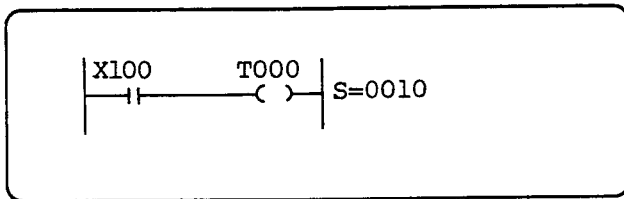
### 5.4.10 Preset change

- Preset change of T, U, and C coils

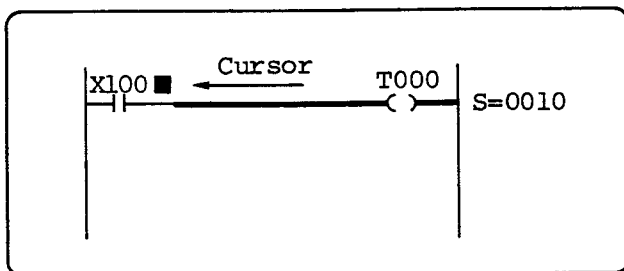
The preset of Timers (T), One-Shots (U), and Counters (C) may be changed.

The presets may be changed even when the PCs is RUN status.

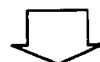
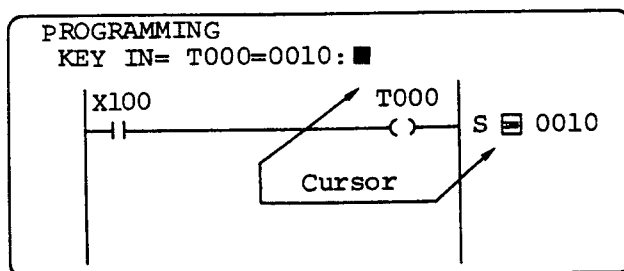
[1]



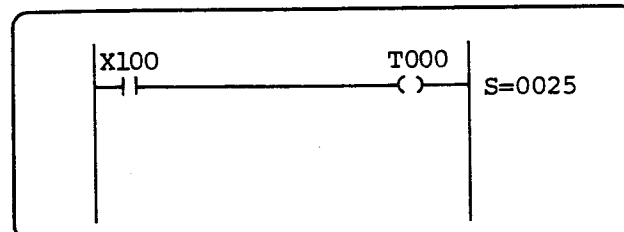
[2]



[3]



[4]



- [1] Read the desired ladder circuit, and then move the cursor backward by pressing key.

- [2] Move the cursor forward by pressing the key. The cursor stops at the position of a preset as can be seen in the figure.

- Notice that the cursor does not stop at the position of a preset, if the key is used.

- [3] Enter a new preset.

Example: To change to 0025, enter .

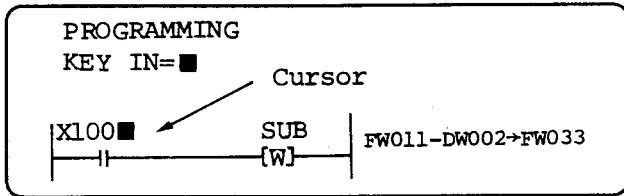
- [4] The preset change is completed, and the PSE waits for a function key entry.

- ERR=AC Alarm to notify that the change was made in RUN status but the change still has been made.

● Change of data manipulation parameter

For the case of changing to the 2nd parameter, DW002-- FW022:

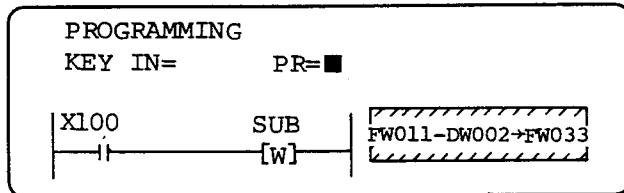
[1]



[1]

- Read the desired circuit, and press the key. (Display of Cursor)
- Pressing the key causes the parameter change wait status.
- If the key is pressed, the parameter change wait status is not established.

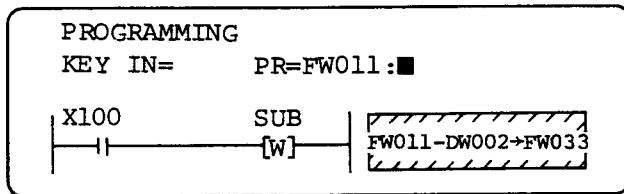
[2]



[2]

- Press the key, since parameter (FW011) is not being changed.

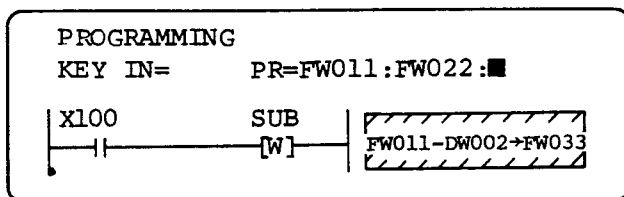
[3]



[3]

- Change the 2nd parameter, "DW002" to "FW022".

[4]



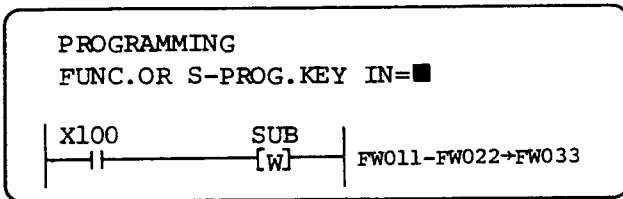
[4]

- Press the key, since 3rd parameter (FW033) is not being changed.

## 5 PROGRAMMING METHOD

---

[5]



[5]

The parameter change is completed, and the 2nd parameter is shown, being changed from "DW002" to "FW022" as can be seen in the figure.

- Parameters are entered using the following keys:

**CNT**

... The cursor is passed to the next parameter input without changing the first parameter.

**RTY**

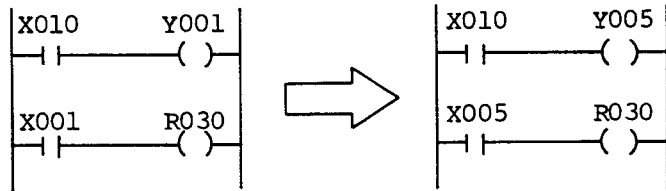
... The cursor is stepped back to the previous parameter.



5.4.11 Batch name change

- (1) When a name change is made and the function remains the same, the change will be made for both contact and output coil.

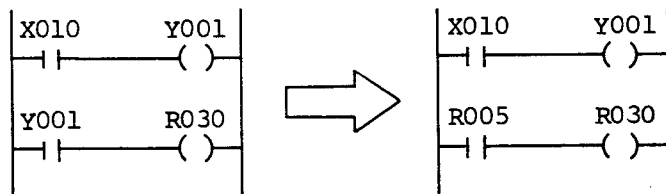
Example: [Y001 -- Y005]



- \* Nothing is changed, if a coil with the new name (Y005 in the example) exists.
- \* Only a change to the same function is possible for V (an edge contact).

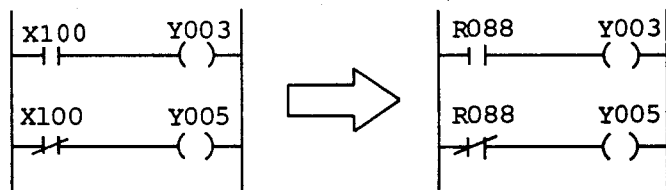
- (2) A change to a different function is permitted only for contacts.

Example: [Y001 -- R005]



- (3) Changes are made independent of whether or not an "a" contact (⊥) and a "b" contact (⌘) have the same name.

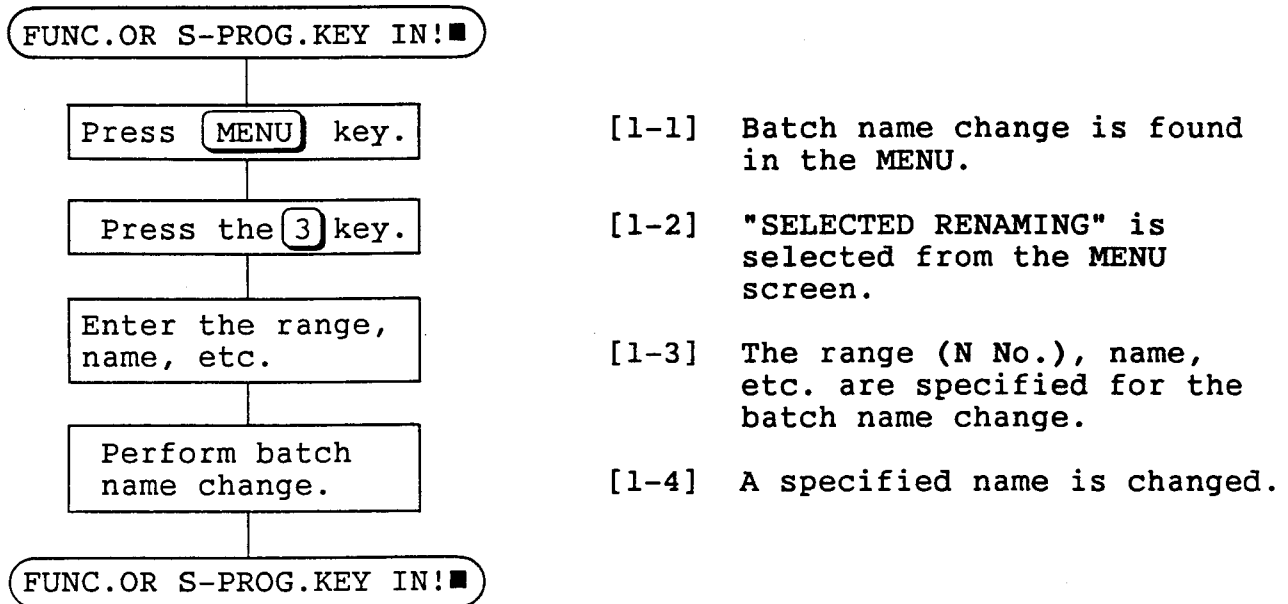
Example: [X100 -- R088]



- (4) Batch name change, searches the entire program, instruction by instruction taking much time. It is recommended to use the PSE in local mode with a backup file saved on a floppy disk. Since the batch name change is executed in the local mode, only the PSE memory is used. Thus the time required for the processing can be reduced.

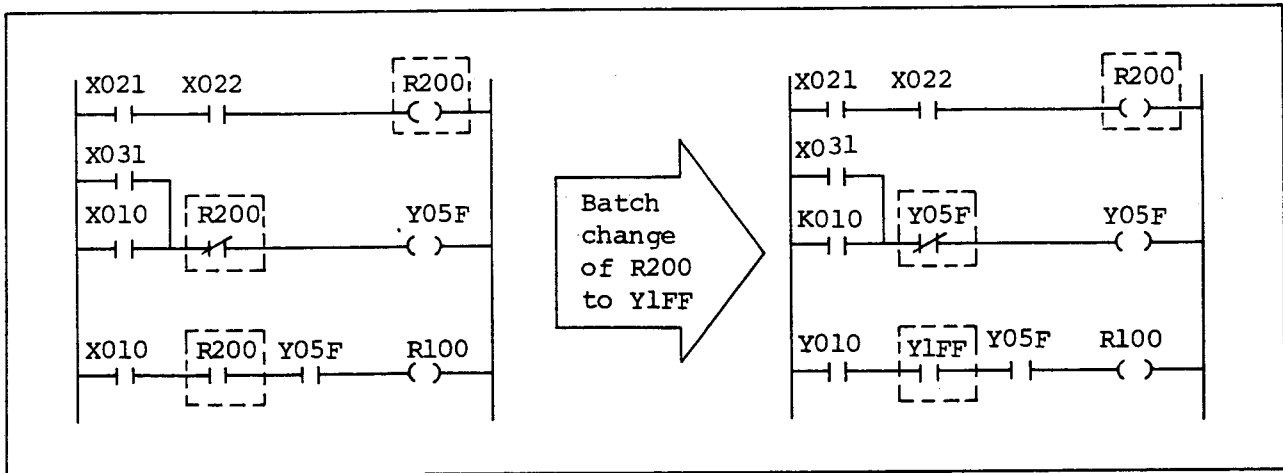
## 5 PROGRAMMING METHOD

### (1) Schematic Flow of batch name change procedure



### (2) Examples of batch name change

Example 1: Change a contact, R200, used in N No.=000 to an unused contact, 1FF.



[1]

[1] Press the **MENU** key.

```
PSE MENU
FUNC.OR S-PROG.KEY IN! ■
```



[2]

[2] Press the **3** key.  
(SELECTED RENAMING:  
Batch name change)

```
PSE MENU
KEY IN MENU No. = ■
-----
PSE SYSTEM MENU
-----
1.:MCS
2.:LPET(SQET) SET
3.:SELECTED RENAMING
```



[3]

[3] Press the **1** key is only a contact rename is desired.  
If renaming to the same function (Example: R-- R) both a contact and coil can be renamed. Press the **2** key in this case.

```
SELECTED RENAMING
KEY IN No. = ■ (CLS)
1.:CONTACT RENAME
2.:CONTACT & COIL RENAME
```



[4]

[4] Enter the associated N No. **000**. In this case, batch renaming is performed only within N 0 0 0 . Press the **CNT** key if the batch renaming in all N Nos. is desired.

```
SELECTED RENAMING
** (CNT(ALL)/RTY/CLS) **
N No. = ■
```



[5]

[5] Enter the old name to be renamed **R 2 0 0**.

```
SELECTED RENAMING
** (RTY/CLS) **
N No. = 000
ENTER OLD NAME = ■
```



## 5 PROGRAMMING METHOD

[6]

```

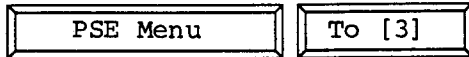
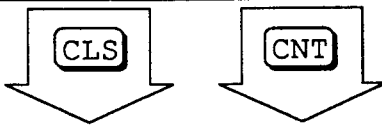
SELECTED RENAMING
  ** (RTY/CLS) **
N No. = 000
ENTER OLD NAME = R200
ENTER NEW NAME = ■
    
```



[7]

```

SELECTED RENAMING
KEY IN = ■ (CLS/CNT)
N No. = 000
ENTER OLD NAME:R200
ENTER NEW NAME:Y1FF
SUCCESS!!RENAME COUNT =0014
    
```



[6] The process starts immediately after **Y 1 F F** is entered. (New Name)

- If a name that already exist in the ladder program is entered at this point, " (New Name) ALREADY EXISTS!!" is displayed. To rename it, see Example 2.

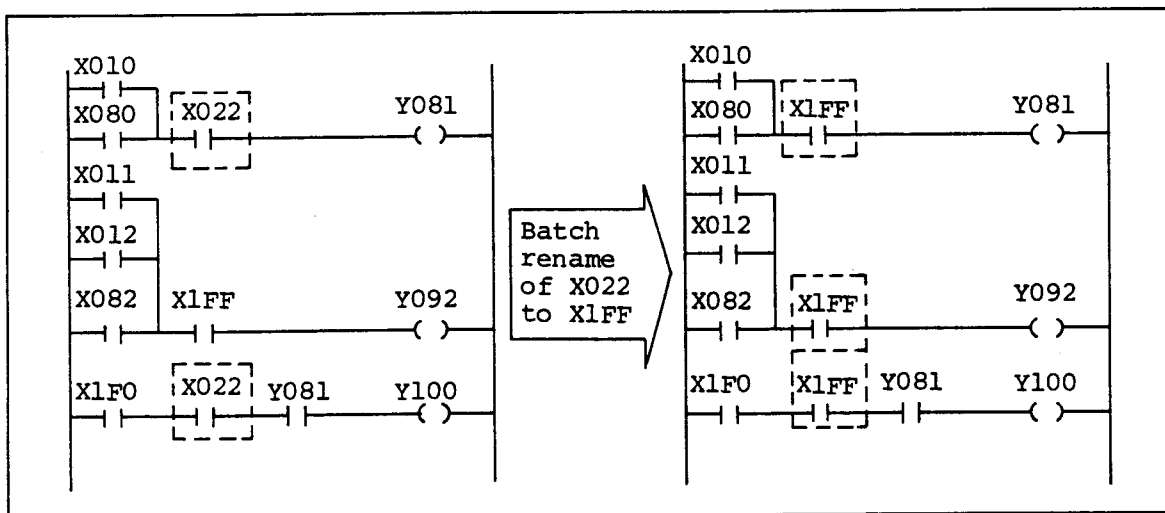
[7] When the batch renaming is completed, the PSE displays the message shown in the figure, then prompts for a key input.

**END** ... Press to end the batch renaming.

**CNT** ... Press to continue the process. Process restarts beginning with [3].

- The N No. input operation in [4] is not required for 4 .

Example 2: Rename a contact, X022, used in N No.=000 to the registered contact, X1FF.



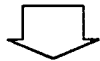
[1] [1] Press the **MENU** key.

```
PSE MENU
FUNC.OR S-PROG.KEY IN! ■
```



[2] [2] Press the **3** key to select batch renaming. (SELECTED RENAMING: Batch name change)

```
PSE MENU
KEY IN MENU No. = ■
-----
PSE SYSTEM MENU
-----
1::MCS
2::LPET(SQET) SET
3::SELECTED RENAMING
```



[3] [3] Press the **1** key if only a contact rename is desired. If renaming to the same function (Example: R-- R) both a contact and coil can be renamed. Press the **2** key in this case.

```
SELECTED RENAMING
KEY IN No. = ■ (CLS)
1::CONTACT RENAME
2::CONTACT & COIL RENAME
```



[4] [4] Enter the associated N No. **0 0 0**. Batch renaming is performed only for N000 in this case. Press the **CNT** key if batch renaming is desired in all N Nos.

```
SELECTED RENAMING
** (CNT(ALL)/RTY/CLS) **
N No. = ■
```



[5] [5] Enter the name to be changed, **X 0 2 2**. (Old Name)

```
SELECTED RENAMING
** (RTY/CLS) **
N No. = 000
ENTER OLD NAME = ■
```



## 5 PROGRAMMING METHOD

[6]

[6] Enter a new name,  1  F  F .

```

SELECTED RENAMING
  ** (RTY/CLS) **
N No. = 000
ENTER OLD NAME = X022
ENTER NEW NAME = ■
    
```

[7]



[7] If a name that already existing in the ladder program is specified, "\*\*\*ALREADY EXISTS!!" is displayed.

```

SELECTED RENAMING
KEY IN = ■ (SET (YES)/CLS (NO))
N No. = 000
ENTER OLD NAME = X200
ENTER NEW NAME = X1FF
X1FF ALREADY EXISTS!!
CONFIRM OK?
    
```

SET ... Performs batch renaming.

CLS ... Performs no processing.



[8]

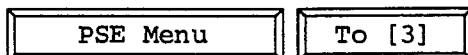
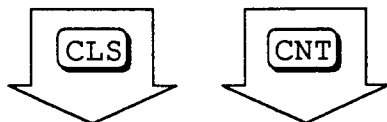
[8] When the batch renaming is completed, the PSE displays the message shown in the figure. Then prompts for a key input.

```

SELECTED RENAMING
KEY IN = ■ (CLS/CNT)
N No. = 000
ENTER OLD NAME = X200
ENTER NEW NAME = X1FF
X1FF ALREADY EXISTS!!
SUCCESS!! RENAME COUNT = 0014
    
```

CLS ... Press to end the batch renaming.

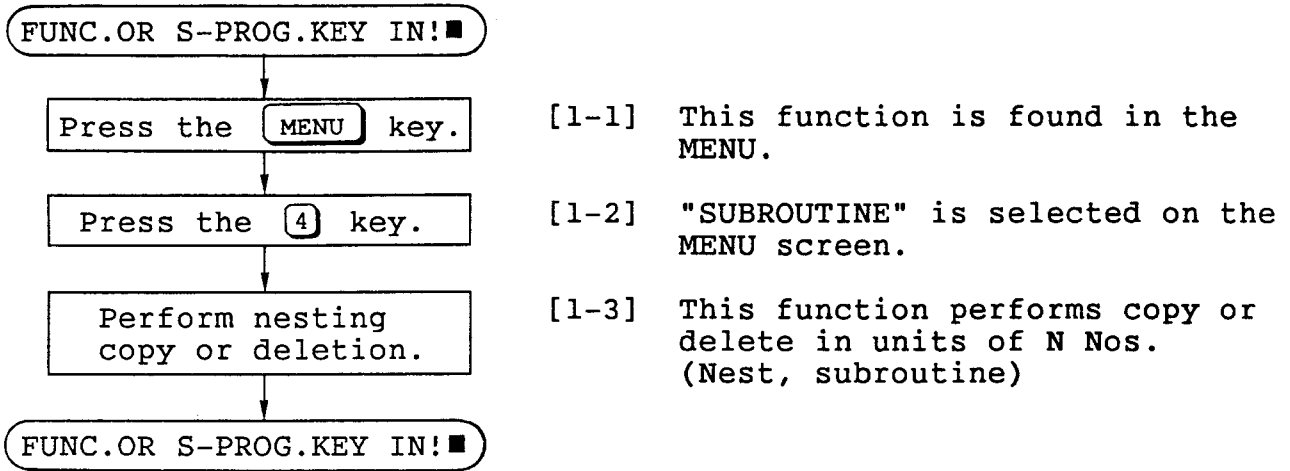
CNT ... Press to continue the process. Process restarts beginning with [3].



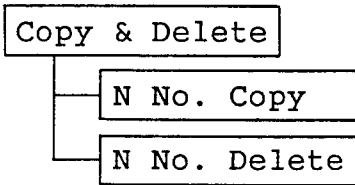
- The N No. input operation in [4] is not required for 4 .

5.4.12 Nest copy and deletion (subroutine)

(1) Schematic Procedure Flow



(2) Outline of Process

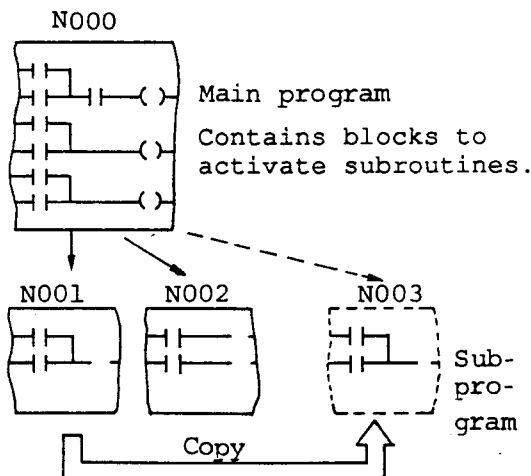


This function is provided with two subfunctions, N No. copy and N No. delete.

[N No. Copy]  
Copies a ladder program stored under one N No. as the copy source to another N No. being the copy destination.

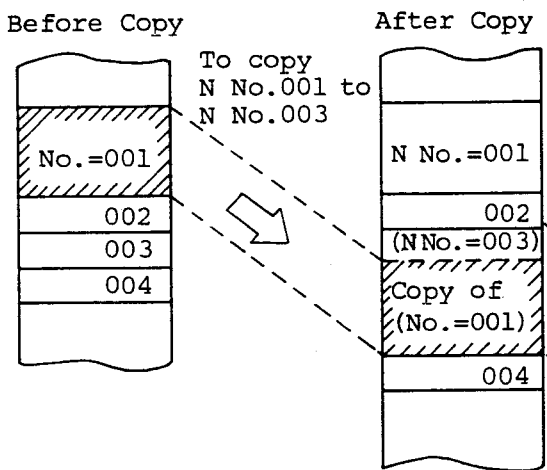
[N No. Delete]  
Deletes a specified N No. ladder program.

(2-1) Outline of N No. Copy



For example,  
To generate the same control program (N003) as the existing control program (N001) as shown in the figure, the ladder program can be copied to N003 by using N No. Copy. The program copied into N003 must now be modified to match the desired process by using functions such as batch rename, replace etc. The main program must be modified to activate this new nest. (subroutine)

## 5 PROGRAMMING METHOD

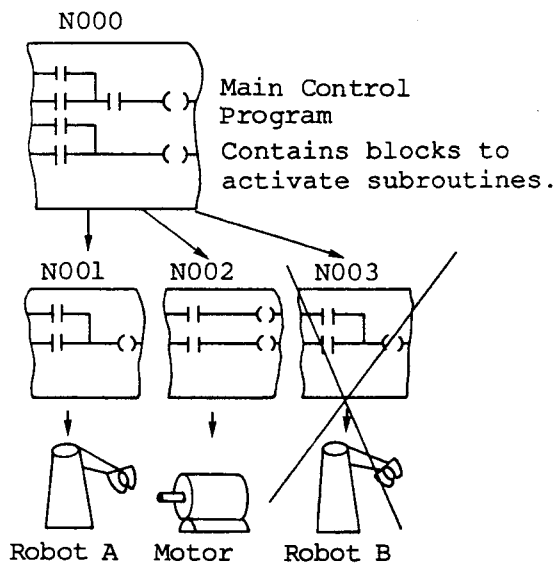


● When a ladder program has already been created in the N No. to which another program is to be copied, the copied program is appended to the existing program. However, since addresses of coils must not be duplicated, the output coils in N003 must be modified.

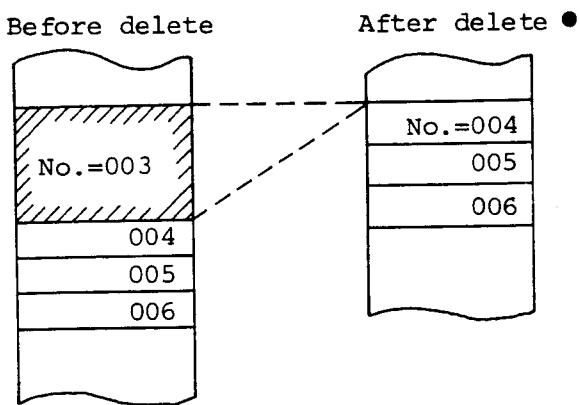
[New program with No.003 =  
 (Old program with No.003  
 + Program with No.001)]

(2-2) Outline of N  
 No. Delete

• If an unnecessary N No. (ladder program) exists as shown in the figure, this function can be used to delete the program.







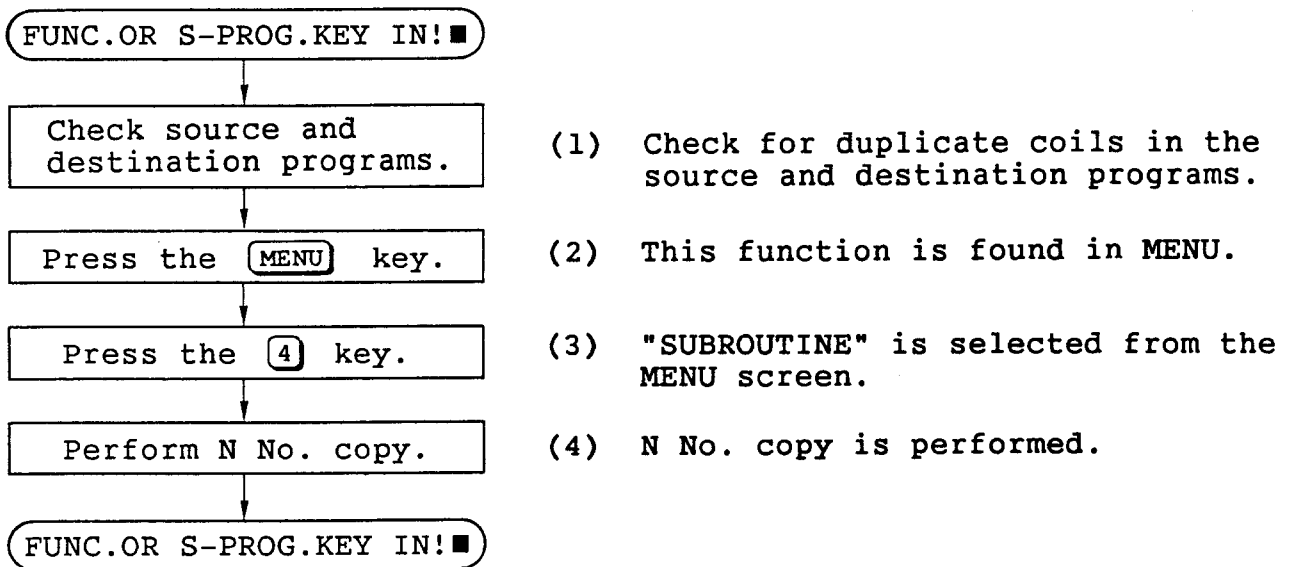
It is not possible to restore a deleted program. A backup file should be saved to a floppy disk, when necessary.

**CAUTION:**

Once a program is deleted, the program cannot be restored unless it was backed up on a floppy disk.

(3) N No. Copy

[Flow of N No. copy procedure]



**Example:** Copy a ladder program of N No.001 to N No.003, assuming N No.003 has no ladder circuit.

## 5 PROGRAMMING METHOD

---

[1] [1] Press the **MENU** key.

```
PSE MAIN
FUNC.OR S-PROG.KEY IN! ■
```



[2] [2] Press the **4** key.

```
PSE MENU
KEY IN MENU No. = ■
-----
PSE SYSTEM MENU
-----
1::MCS
2::LPET(SQET) SET
3::SELECTED RENAMING
4::NESTING COPY & DELETE
```



[3] [3] Press the **1** key.

```
SUBROUTINE
KEY IN No. = ■ (CLS)
1::N No. COPY
2::N No. DELETE
```



[4] [4] Enter **0 1 0 3**.

```
N No. COPY          Cursor
ENTER COPY N No. :NO■→NO
                ↙ Copy source
                ↘ Copy destination
```

Copy source (N No.=001)    Copy destination (N No.=003)



[5] [5] Press the **0** key.

```
N No. COPY
ENTER COPY N No. =NO01→NO03
SET OK? ■ 0:OK 1:NG
```

(If **1** is pressed, control is returned to [4]).

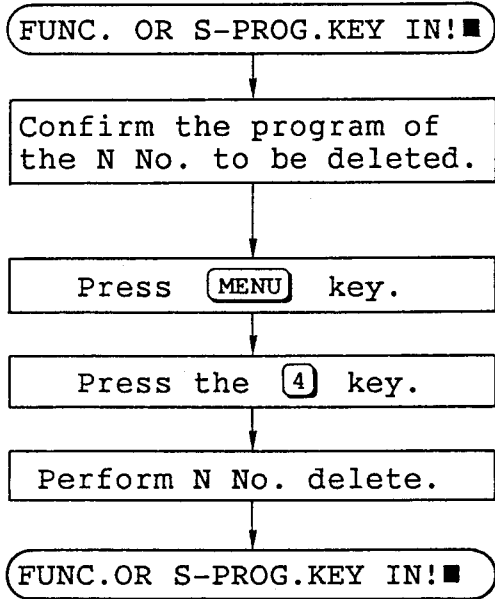


```
[6]
N No. COPY
ENTER COPY N No. =N001→N003
SET OK? 0 0:OK 1:NG
SUCCESS!!
STRIKE ANY KEY
```

[6] SUCCESS appears when the N No. copy ends normally. Pressing any key returns control to the MENU screen, ending the process.

(4) N No. Delete

[Flow of N No. delete procedure]



- (1) Be careful not to enter the wrong N No. for deletion. Preparing a backup file on a floppy disk is recommended.
- (2) This function is found in MENU.
- (3) "SUBROUTINE" is selected from the MENU screen.
- (4) N No. deletion is performed.

Example: Delete a ladder program of N No.003.

```
[1]
FUNC. OR S-PROG KEY IN! ■
```

[1] Press the MENU key.

```
[2]
PSE MENU
KEY IN MENU No. = ■
-----
PSE SYSTEM MENU
-----
1::MCS
2::LPET(SQET) SET
3::SELECTED RENAMING
4::NESTING COPY & DELETE
```

[2] Press the 4 key.


## 5 PROGRAMMING METHOD

---

[3]

[3] Press the **2** key.


```
SUBROUTINE
KEY IN No. = ■ (CLS)
1: :N No. COPY
2: :N No. DELETE
```



[4]

[4] Enter **03**.  
N No. being deleted


```
N No. DELETE
ENTER DELETE N No. =NO ■
```



[5]

[5] Press the **0** key.  
(Confirm the N No. to be deleted.)  
(If **1** is pressed, control is returned to [4].)

```
N No. DELETE
ENTER DELETE N No. =N003
SET OK? ■
0:OK 1:NG
```




[6]

[6] Press the **0** key.

(If **1** is pressed, control is returned to [4].)

```
N No. DELETE
ENTER DELETE N No. =N003
SET OK? 0
REALLY? ■ 0:OK 1:NG
```



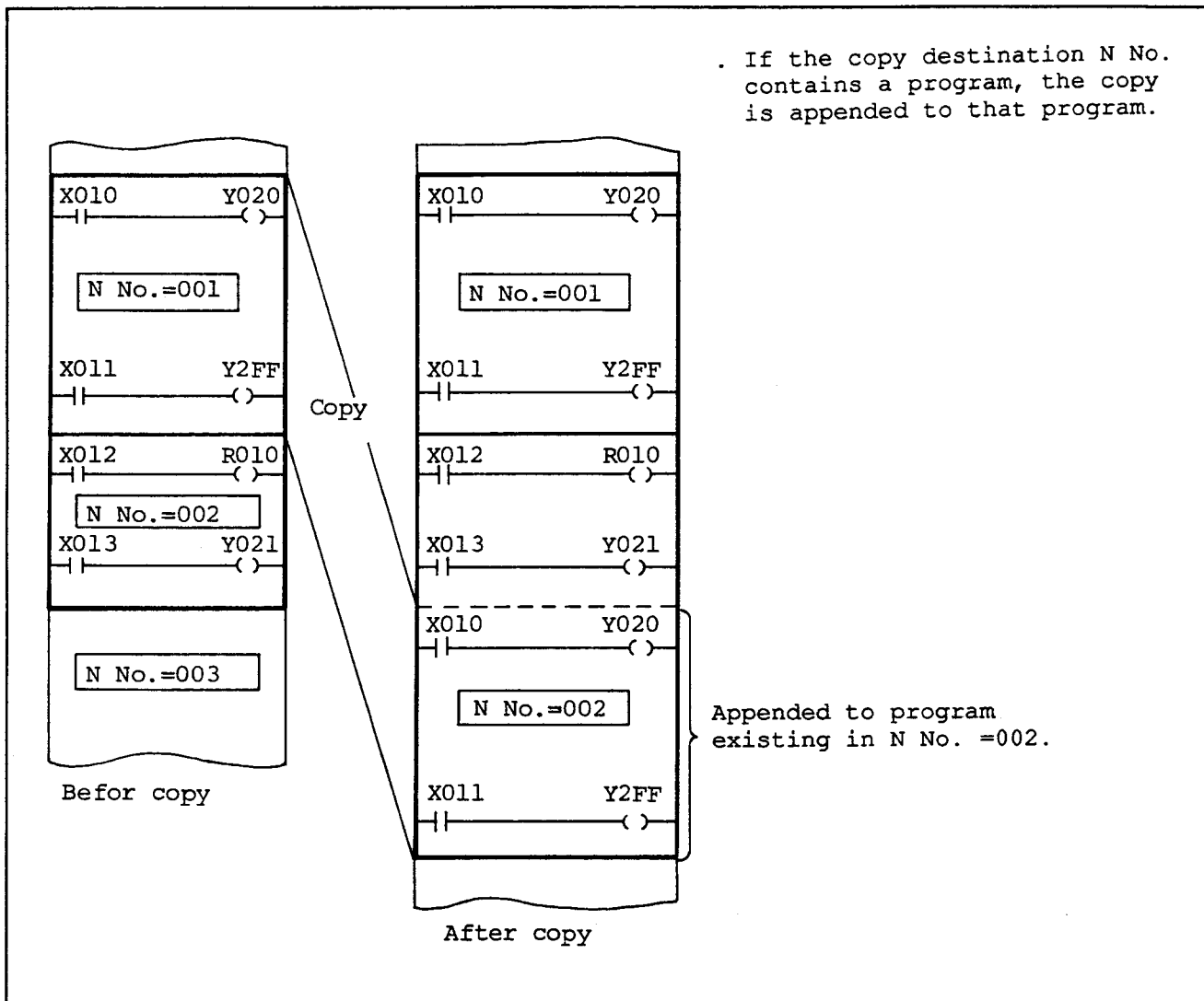
[7]

[7] SUCCESS appears when the N No. delete ends normally. Pressing any key returns control to the MENU screen, ending the process.

```
N No. DELETE
ENTER DELETE N No. =N003
SET OK? 0
REALLY? 0 0:OK 1:NG
SUCCESS!!
STRIKE ANY KEY
```

(5) Supplementary Description

① N No. Copy

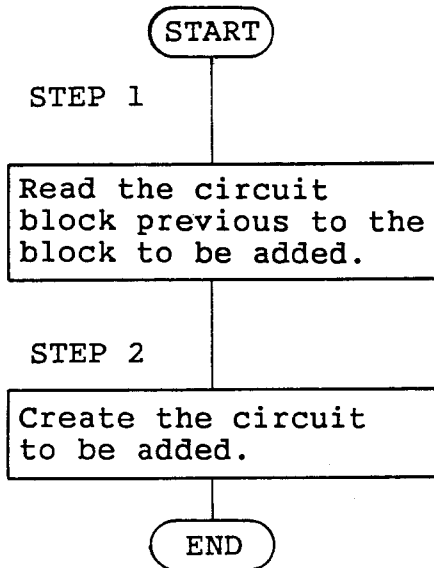


② Others

The subroutine process takes a lot of time because a large amount of data is moved. It is recommended, therefore, to operate the PSE in local mode, and save a backup in a floppy disk. The process time can be reduced since the processing is occurs in the PSE memory.

## 5.5 Adding Ladder Block

### 5.5.1 Location for adding ladder circuit

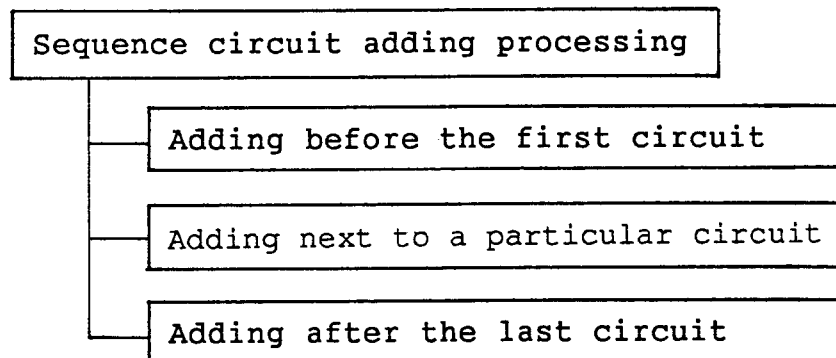


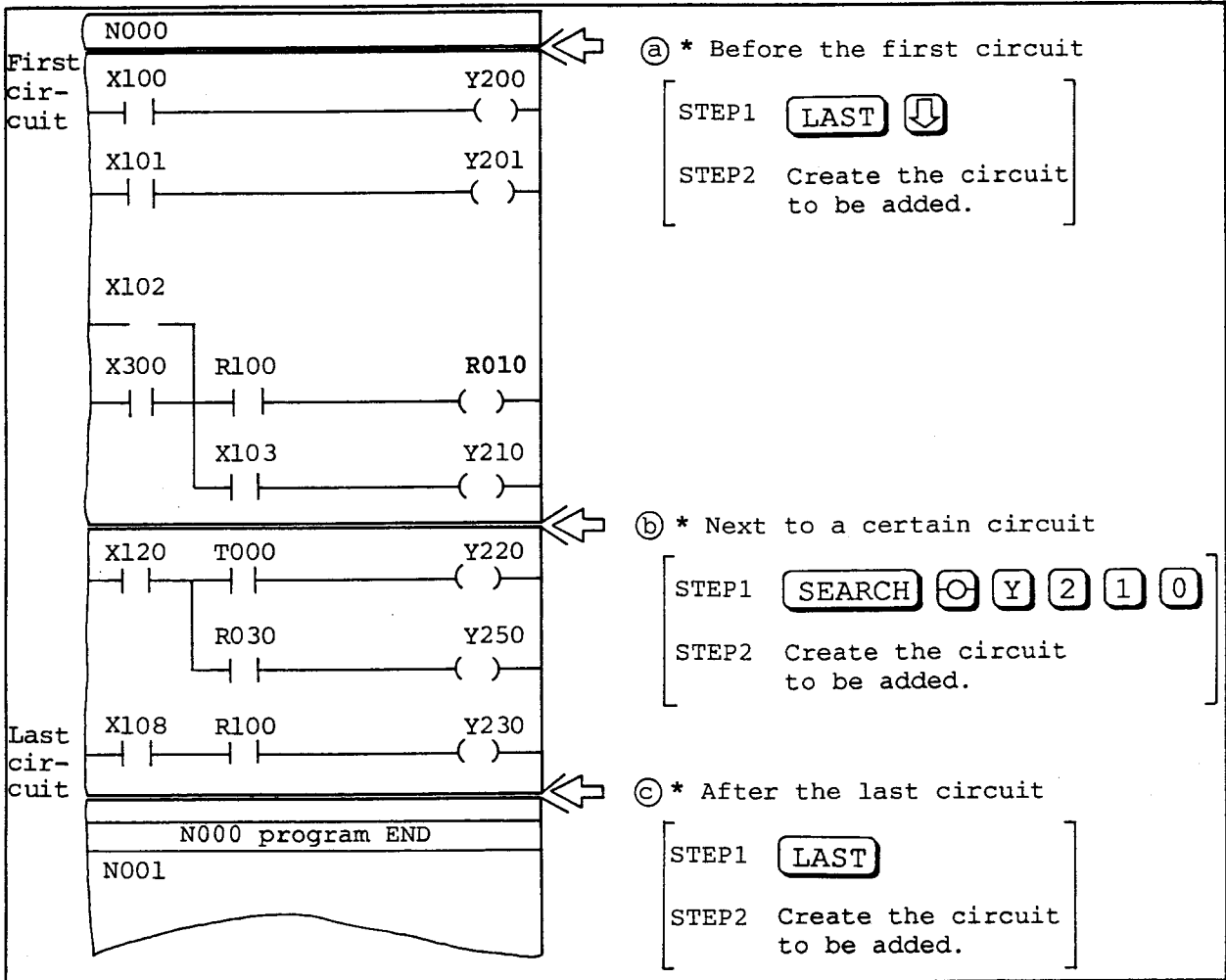
A ladder circuit is normally added using the following procedures:

<STEP 1>  
Read the circuit block previous to the block to be added.

<STEP 2>  
Create the circuit to be added.  
The procedure for adding a circuit is divided into 3 types depending on the location where a new circuit is to be added:

- a Before the first circuit (Added at N No. Top)
- b Next to a particular circuit
- c After the last circuit (Added at N No. End)






## 5 PROGRAMMING METHOD



### 5.5.2 Adding a block as the leading circuit

If a circuit is created while "N No.TOP" is displayed, it becomes the first circuit.

- ① To create a circuit at the beginning of the Nest (subroutine) currently displayed:

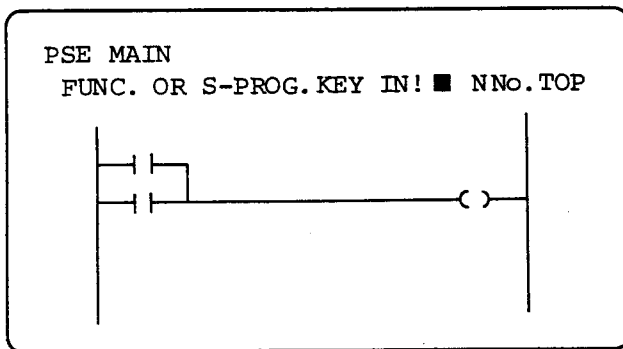
**LAST READ** →  → Circuit Construction


- ② To create a circuit at the beginning of a Nest (subroutine) other than that displayed at present:

**N COIL NO.**  →  → Circuit Construction  
N No.

[Example of addition before the first circuit]

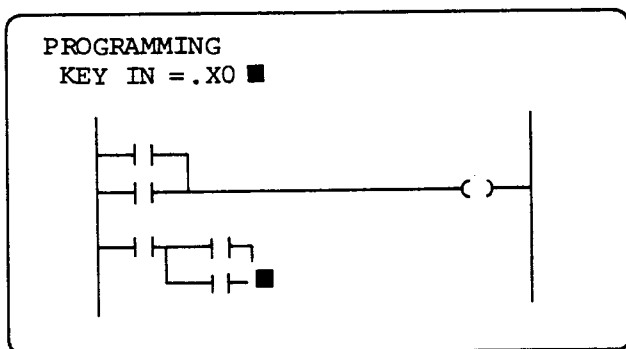
[1]



- [1] Press the **LAST READ** , and  confirm that "N No. TOP" appears in the monitor field.



[2]

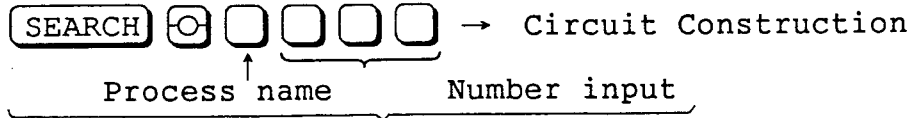


- [2] Create the new circuit to be added.



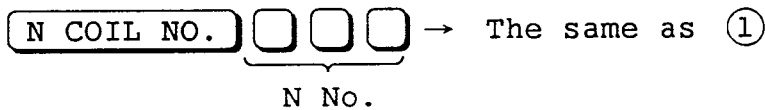
5.5.3 Adding a sequence block next to a specified circuit

- ① To create a circuit within the Nest (subroutine) currently displayed:



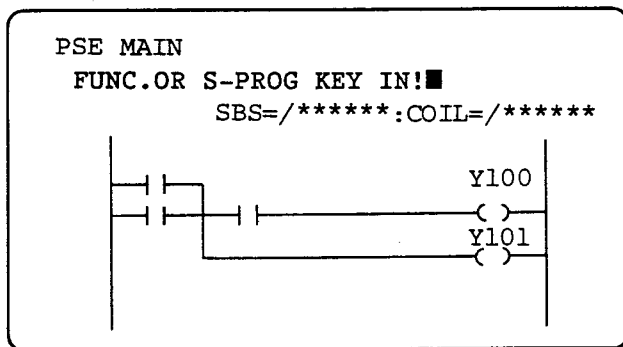
The ladder block immediately before the location for the addition is read out.

- ② To create a circuit in a location other than the Nest (subroutine) currently displayed:



[Example of addition next to a particular circuit]

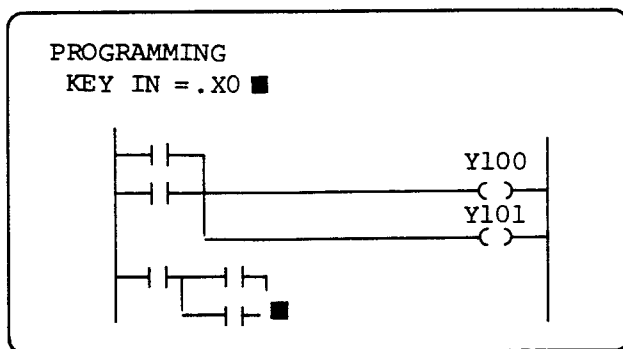
[1]



- [1] To add next to a circuit, (←)Y 1 0 1 , press



[2]



- [2] Create the new circuit to be added.

## 5 PROGRAMMING METHOD

### 5.5.4 Adding a block as the last circuit

- ① To create a circuit at the end of the Nest (subroutine) currently displayed:

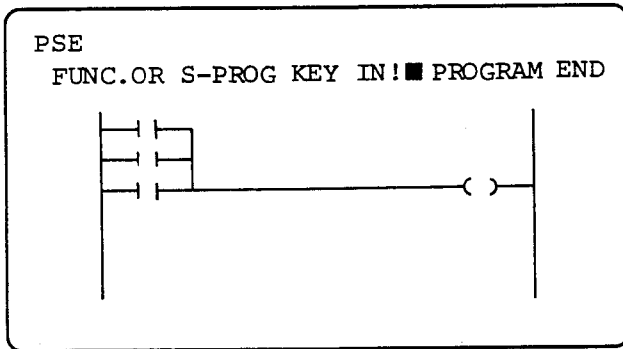
**LAST** → Circuit Construction

- ② To create a circuit at the end of a Nest (subroutine) other than that displayed at present:

**N COIL NO.**    → Circuit Construction  
N No.

[Example of addition next to the last circuit]

[1]

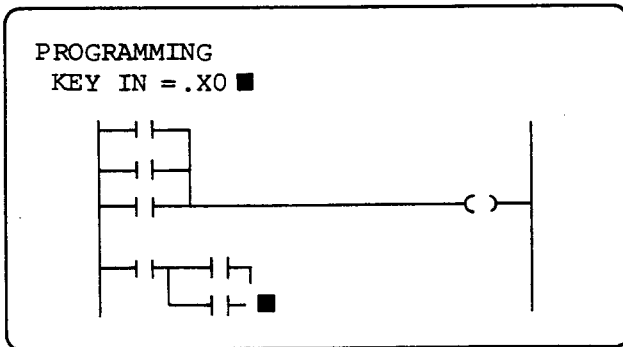


- [1] Press the **LAST** key, and confirm that "PROGRAM END" appears on the screen.

In the case of ② in the above, "N No. END" appears and no circuit is displayed.

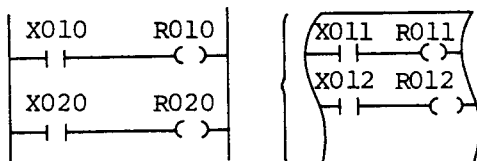


[2]



- [2] Create the new circuit to be added.

[Supplement]



It is not necessary to perform the circuit read for every block, when more than one block is being added. The following description uses the circuit in the above as an example.

<STEP 1> Read the circuit previous to the circuit to be added  
Press **SEARCH** **○** **R** **0** **1** **0**.

<STEP 2> Create the first block of the circuits to be added

**⊞** **X** **0** **1** **1**

**○** **R** **0** **1** **1**

Creation of a block causes the reading of R011 without further circuit read.

<STEP 3> Create the following circuits:

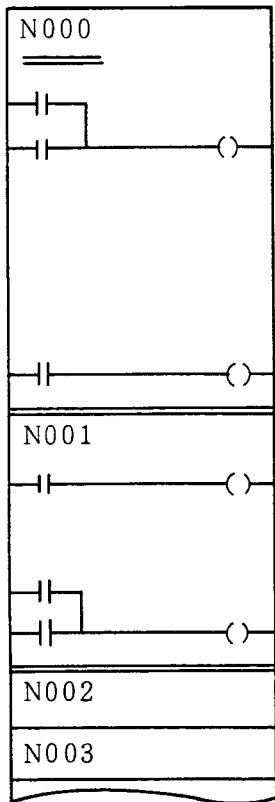
**⊞** **X** **0** **1** **2**

**○** **R** **0** **1** **2**

As in <STEP 2>, **○** R012 is read by this operation.

<STEP 4> The next circuit is **○** R020. **○** R020 is read by pressing the **↓** key.

5.6 N Coil No.



- When creating, modifying, or reading a ladder program, the N No. storing the program is set by this function. N No.=000 when the PSE is started up.

NEST NO.SET 0 0 1



- If the N No. is changed to N NO.=001 after starting up the PSE, creation, modification, or reading of a ladder program is associated with the program area of N No.=001.

N No.	Description
N000	Main control program
N001 ⋮ NOFF	Individual control program

To change the N No., press the keys as shown below:

N COIL No. 0 0 1

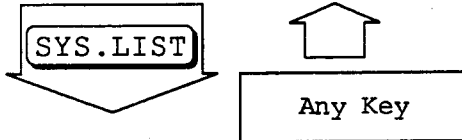
N No. (3 digits in hexadecimal notation)

- "N No. END" appears in the upper right corner. If programming is performed in this status, the program is created after the existing program, if any.

## 5.7 Capacity Display

[PSE Main Screen]

PSE MAIN  
FUNC.OR S-PROG. KEY IN!■



If the **SYS.LIST** key is pressed on the PSE Main Screen, PCs edition information, address information, and other information is displayed as can be seen in the following figure. Pressing any key returns control to "PSE MAIN".

[Capacity Display Screen]

SYSTEM LIST A PCS No.=N003 N No.=000 MODE=STP KBD=NORM  
⑨ <US:04097 FR:25087>

①	PSE SYSTEM Ver1.0 Rev0.0 PCS OS (F/D) Ver1.0 Rev0.0 (00F2)
②	T(TIMER) :T000-T0FF(256) U(ONE SHOT):U000-U03F(064) C(COUNTER) :C000-C03F(064)
③	CPU LINK:G000-G0FF (HOLD) SUB CPU LINK:RECEIVE ONLY (CLR)
④	REMOTE I/O POINTS =2048
⑤	SEQUENCE CYCLE TIME=0030
⑥	S-MODE FENCE ADDR.=/7FFF8
⑦	10M SEC. TIMER(T000-T00F)=USE
⑧	PCS STOP INPUT No. =X0FF

- ① . Version/Revision No. of PSE System F/D
- . OS Version/Revision No. of PCs (remote mode) OS contained in F/D, (local mode)
- ② Displays the number of T, U and C function points registered.
- ③ Number of transfer words of CPU-CPU Link and SUBCPU-SUBCPU Link, And Hold/Clear specification of G area

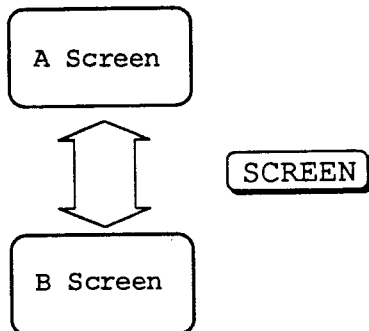
(HOLD: Receive data hold  
CLR : Receive data clear  
RECEIVE ONLY: Dedicated to receiving)

## 5 PROGRAMMING METHOD

---

- ④ Number of remote I/O points allowed to communicate
  - ⑤ Sequence cycle time set at present (msec.)
  - ⑥ Address of S-mode fence
  - ⑦ Whether the 10 msec. timer is used or not  
(NO USE: Not in use)  
(USE: In use)
  - ⑧ External stop input No.  
(NO USE: Not in use  
(X□□□ : Address of external input setting)
  - ⑨ Space used by the current ladder program (US:) and Free Space (FR:)
- ④ and ⑤ are shown for S10/2 only.

## 5.8 Screen Switching

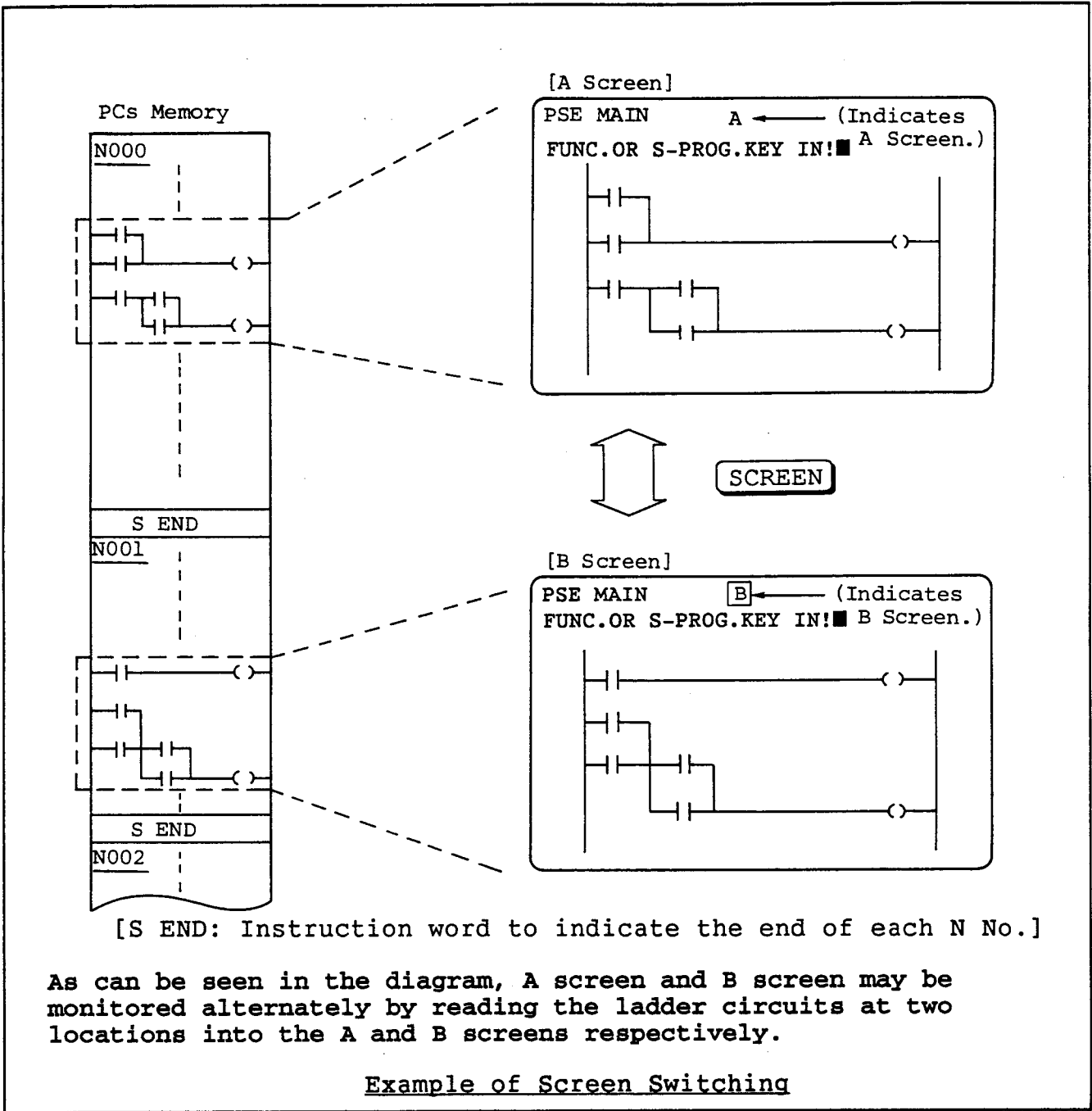


The PSE has two display screens, A and B, programming can be performed (on A Screen only) and monitoring of two areas can be performed by alternating these two screens. Switching screens is done by pressing the **SCREEN** key. The screen changes from A to B, and from B to A.

The following diagram explains the relationship between the ladder circuits and the display screen.

- This operation is possible also in dynamic monitoring.

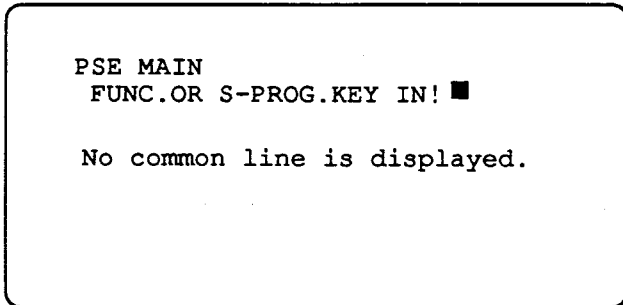
## 5 PROGRAMMING METHOD





● Restrictions on Screen Switching

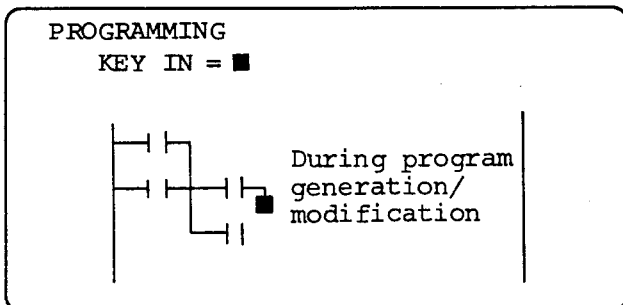
[1]



[1]

An error occurs if no common line is found on the present screen. Read a sequence ladder circuit on the screen then switch screens.

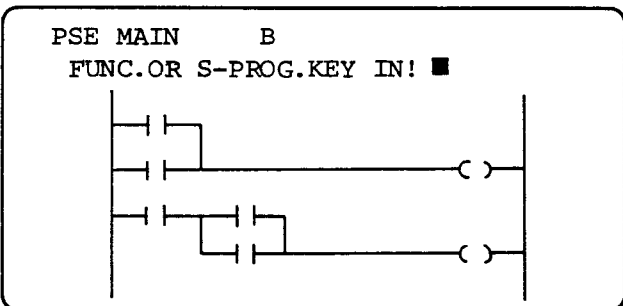
[2]



[2]

An error occurs if the **SCREEN** key is pressed during the creation/modification of a ladder circuit. Complete the operation before switching screens.

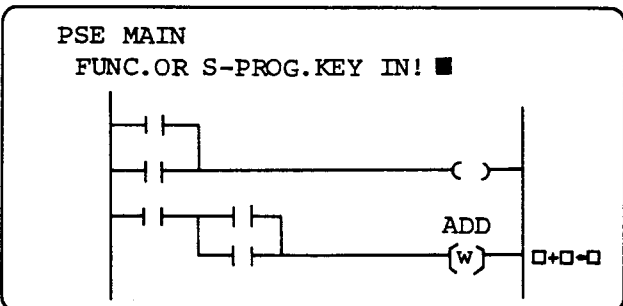
[3]



[3]

"Programming is not permitted on the B Screen." Screens cannot be switched immediately after an error occurred due to programming in screen B. In this case, read the next block then switch the screen.

[4]



[4]

An error occurs if the **SCREEN** key is pressed when the bottom circuit (circuit read last) is a data manipulation. (It is allowed if it is not located on the last line.) Perform the operation after reading a circuit other than the data manipulation.

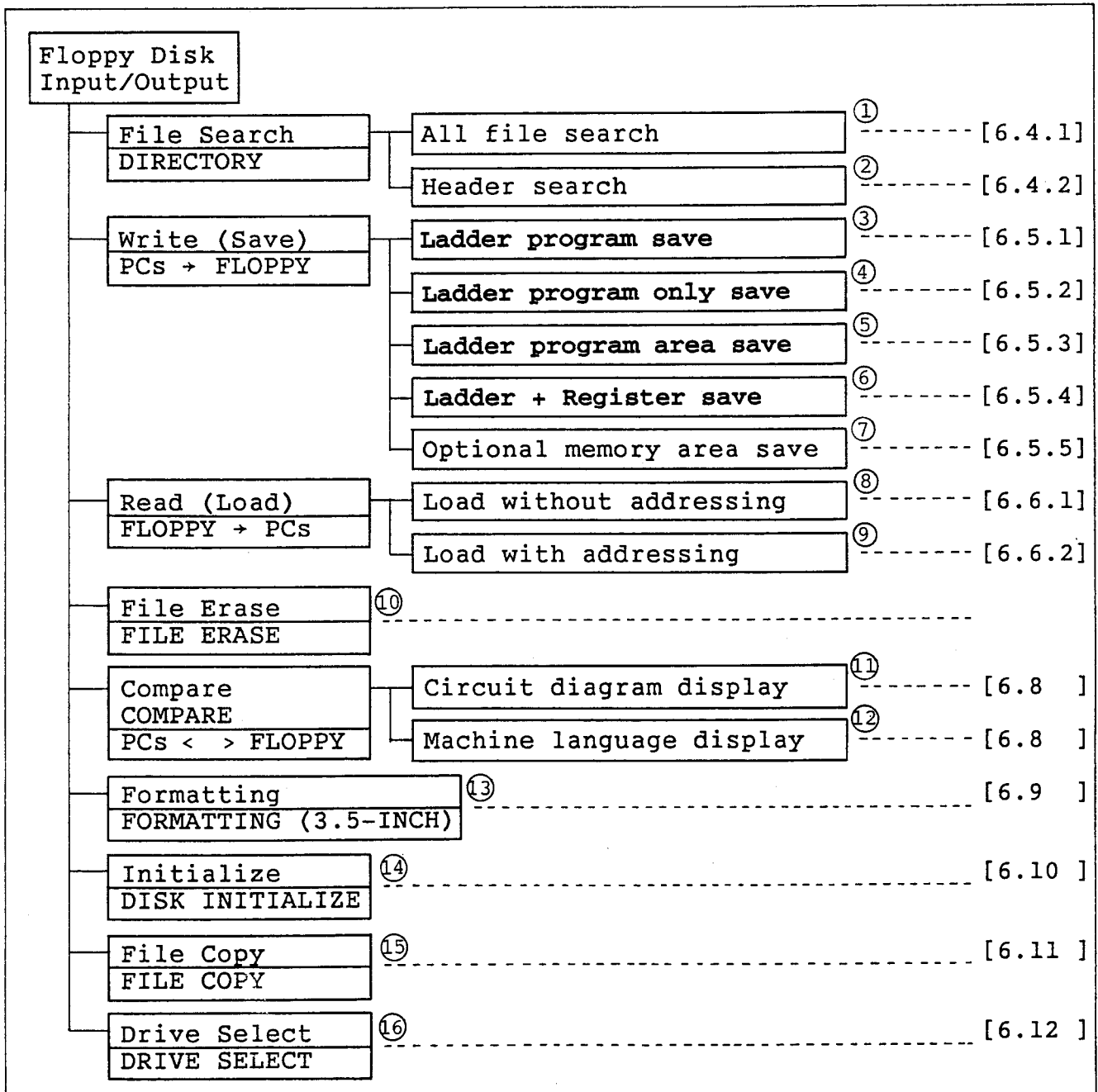
**THIS PAGE INTENTIONALLY LEFT BLANK.**

# **6 FLOPPY DISK INPUT/OUTPUT**

## 6 FLOPPY DISK INPUT/OUTPUT

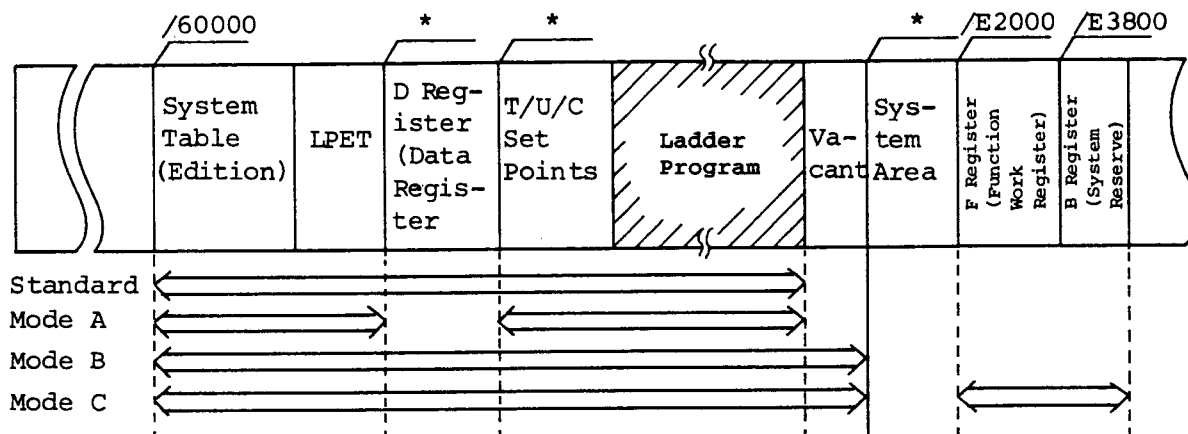
### 6.1 Outline of Function

This function saves a program in the PCs memory or in the PSE local memory into a floppy disk to keep a back file, or loads the contents of a floppy disk into the memory. The file is stored in a floppy disk as a file, and saving and loading of a program is performed by specifying a file name. A number of files (programs) may be stored in one floppy disk.



- ① All file search  
Displays the names of all the files stored on a floppy disk.
- ② Header search  
Displays the contents of the header of a specified file (PCs No., date of creation, etc.)
- ③ Ladder program save (Standard)  
Is used for saving (writing) a program on a floppy disk as a backup file. This is a normal operation.
- ④ Saving only the ladder program (Mode A)  
Saves a ladder program minus the D register. This function is used to prevent the contents of the D register from being changed when this program is loaded in PCs.
- ⑤ Saving ladder program area (Mode B)  
Saves the entire ladder program area (including D register). This function is used, for example, when the area after the ladder program is used for the data area, etc.
- ⑥ Saving ladder + register (Mode C)  
Saves the entire sequence program (including D register), the function work register (F), and the base register (B).  
The following chart is shown for selections ③, ④, ⑤, or ⑥:

## 6 FLOPPY DISK INPUT/OUTPUT



\* : Address differs depending on the types of PCs.

### ⑦ Optional memory area save

Is used for saving selected areas only. A maximum of 4 different areas may be saved in one file.

### ⑧ Load without addressing

Loads a program into the same area it was saved from (same address).

### ⑨ Load with addressing

Loads a program into an area different from the area it was saved from (different from the address of the file header).

### ⑩ File Erase

This function is used to delete unnecessary files from a floppy disk.

### ⑪ Circuit diagram display

Compares the contents of the PCs memory with those of a specified file on a floppy disk, and displays the contents if they do not agree.

### ⑫ Machine language display

Compares the contents of the PCs memory with the contents of a file, and displays the contents in machine language if they do not agree.

⑬ Formatting

This process is mandatory for a new floppy disk. No other disk operations can be performed, if this process is omitted.

⑭ Initialize

Initializes the file management area of floppy disks. This function is used to delete all the existing files.

⑮ File Copy

Copies files from the RAM disk to an existing floppy disk, and vice versa.

⑯ Drive Select

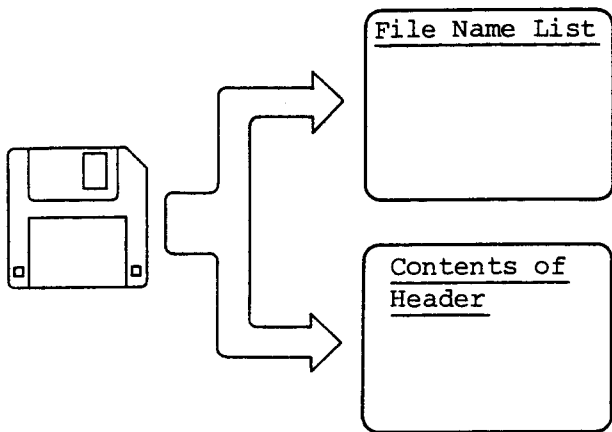
Selects the RAM disk or the floppy disk.

**Note:** When you use HPC-6000-05 (extended memory 0.5 type PSE $\alpha$ ), do not use the RAM disk.

6.2 Descriptions of Processes

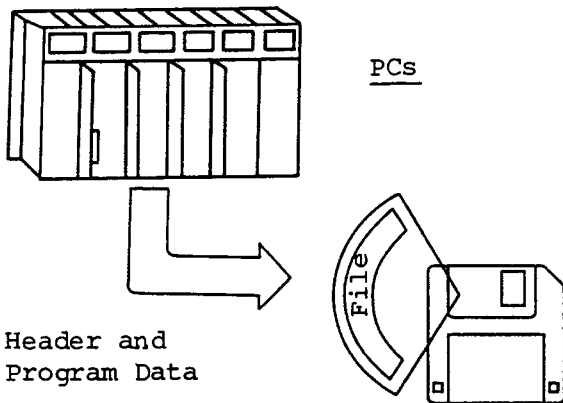
(1) Explanation of Each Function

[1] File search (DIRECTORY)



- . Displays a File Name List. The names of all the files stored on a floppy disk are displayed.
- . Displays the contents of the header of a specified file.

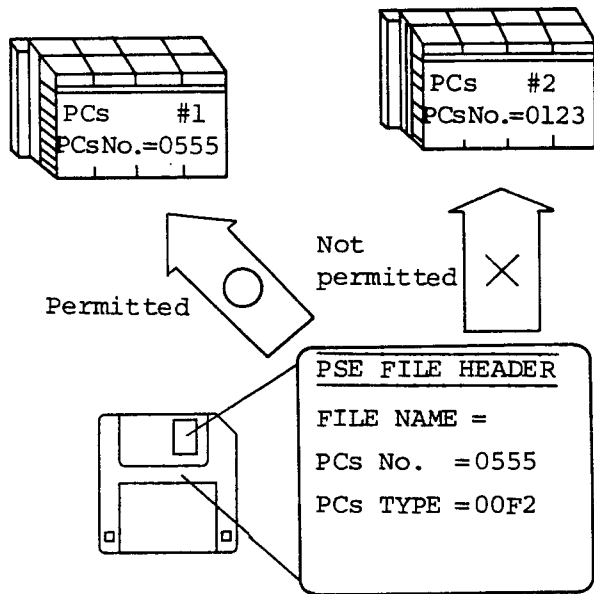
[2] Write (PCs -- FLOPPY: Save)



- o Stores header + program.
- o Contents of Header
  - . File name
  - . PCs No.
  - . PCs Type
  - . Date of Creation
  - . Comment program storage address



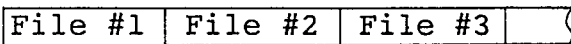
[3] Read (FLOPPY -- PCs : Load)



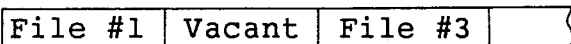
- A file can be loaded to a PCs only if the PCs No. in the file header is the same as the PCs No. of the connected PCs (PSE). However, if when a file was saved to floppy disk a PCs No. of 9999 was assigned, the file can be loaded to any PCs independent of its PCs No.
- When loading, the PCs should be in the "STOP" status. Loading is not possible in any other status.

[4] Delete (FILE ERASE)

Before deletion



After deletion

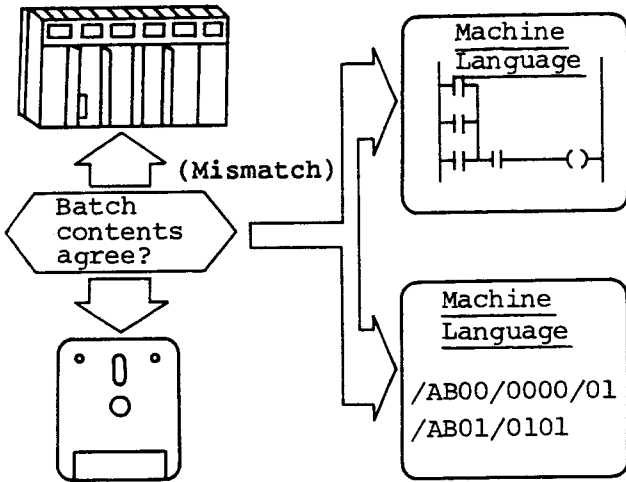


↑  
Next generated file is stored

- When a file is deleted, the space where the deleted file was stored becomes vacant. This vacant space is used when the next file is stored.

## 6 FLOPPY DISK INPUT/OUTPUT

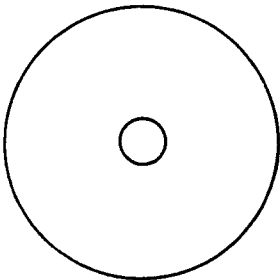
### [5] Comparison (COMPARE PCS FLOPPY)



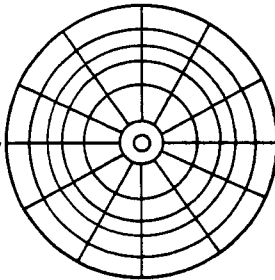
- . Areas which can be shown by a circuit diagram can be compared and displayed in a circuit diagram.

### [6] Formatting

Before formatting



After formatting



- . Tracks and sectors are written in a new floppy disk, allowing program save/load. If a floppy disk, which contains files, is formatted all the files are erased.

Tracks and sectors are written, and clearing the entire area is cleared.

### [7] Initialize

Before initialize

PSEHEAD.PSE	File #1	File #2	
-------------	---------	---------	--

After initialize

PSEHEAD.PSE			
-------------	--	--	--

- . All files are deleted.

- . Initialization creates or clears the directory area managing the files on a floppy disk. Since the directory area is cleared completely, stored programs are all erased, if there are any. A file for system use (PSEHEAD.PSE) is created whenever the initialize process is performed.

(2) File Name and File Type

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">SAMPLE</td> <td style="width: 50%; padding: 2px;">.PSE</td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p><b>File Name</b>                  (1) The first character is an English letter.                  (2) Up to 8 characters                  (3) Alphanumerics only</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px; width: fit-content; margin-left: auto;"> <p><b>File Type</b>                  (1) .PSE                  (2) .S10                  (3) .CMT</p> </div>	SAMPLE	.PSE	<p>The PSE uses three types of files. They are distinguished by a file type in 3 characters following the file name. A file name consists of up to 8 characters beginning with an English letter.</p>										
SAMPLE	.PSE												
<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><u>PSE FILE HEADER</u></p> <p>FILE NAME: SAMPLE .PSE ← (File name)                  PCS NO. : 0010 ← (PCs NO.)                  PCS TYPE : 00F2 ← (PCs type)                  Y-M-D-H : 86-11-17-18 ← (Date/time of creation)                  COMMENT : PSE FILE ← (Comment)                  FILE SIZE: 066 (K-WORD) ← (File size)                  ADDRESS = /060000-060FFE (Address)                  ADDRESS - /063000-07FFFE</p> </div>	<p>[1] PSE Standard File (.PSE)</p> <p>PCs memory data file created by PSE                  When loading, this file is checked for "PCs No." and "PCs type" to prevent the loading of a wrong file. A file with only one address line specified may be loaded at another address.</p>												
<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><u>C-MODE PROGRAM HEADER</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">TOP</th> <th style="text-align: left;">SIZE</th> <th></th> </tr> </thead> <tbody> <tr> <td>TEXT : /061000</td> <td>:/000100</td> <td>← (Text information)</td> </tr> <tr> <td>DATA : /061100</td> <td>:/000080</td> <td>← (Data information)</td> </tr> <tr> <td>WORK : /061180</td> <td>:/000040</td> <td>← (Work information)</td> </tr> </tbody> </table> <p style="margin-left: 40px;">(Size)                  (Leading address) } Hexadecimal notation</p> </div>	TOP	SIZE		TEXT : /061000	:/000100	← (Text information)	DATA : /061100	:/000080	← (Data information)	WORK : /061180	:/000040	← (Work information)	<p>[2] C Mode Program File (.S10)</p> <p>The file header shows this is a C-mode program generated by PSE (For 68000 CPU).                  It is not possible to load this file at a different address. It may be loaded to any PCs, since a check is not made on "PCs No." and "PCs type".                  The WORK part (work area) is cleared with zeros at loading.</p>
TOP	SIZE												
TEXT : /061000	:/000100	← (Text information)											
DATA : /061100	:/000080	← (Data information)											
WORK : /061180	:/000040	← (Work information)											

## 6 FLOPPY DISK INPUT/OUTPUT

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### [3] Comment File (.CMT)

#### COMMENT FILE HEADER

FILE NAME: SAMPLE.CNT ← (File name)  
PCS NO. : 0001 ← (PCs NO.)  
PCS TYPE : 00F2 ← (PCs type)  
Y-M-D-H : 86-11-17-18 ← (Date/time of  
creation)  
COMMENT : PCS COMMENT ← (Comment)

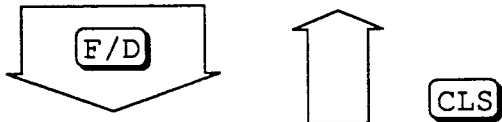
The file header shows that this is a comment file created by PSE. Read/write by a Floppy Disk menu operation is not possible, except for "DIRECTORY" and "FILE ERASE". The file can be accessed by the comment process only.

## 6.3 Operation

### 6.3.1 Outline

[PSE Main Screen]

```
PSE  MAIN
FUNC.OR S-PROG.KEY IN!■
```



(Floppy Menu Screen)

```
FLOPPY MENU
KEY IN NO = ■ (/CLS)
-----
                FLOPPY MENU
-----
1 : DIRECTOR
2 : PCS --> FLOPPY
3 : FLOPPY --> PCS
4 : FILE ERASE
5 : COMPARE PCS <> FLOPPY
6 : FORMATTING
7 : INITIALIZE
8 : FILE COPY
9 : DRIVE SELECT
-----
```

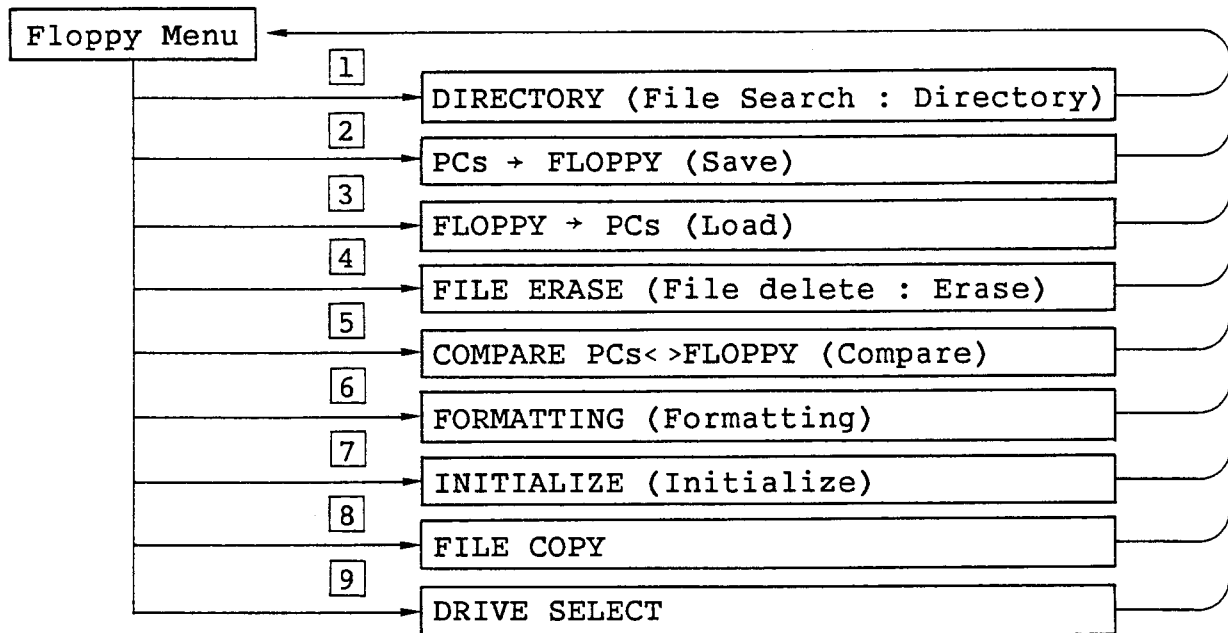
- Pressing the function key, **F/D**, on the PSE Main Screen displays the floppy disk menu.

- Pressing the number key corresponding to each process on the Floppy Menu Screen initiates each function. Pressing the **CLS** key returns control to the PSE Main Screen.

## 6 FLOPPY DISK INPUT/OUTPUT

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### Schematic Flow of Floppy Process



## 6.3.2 Procedure

This section explains the procedures of handling new floppy disks, and program save/load from/to the PCs memory (or PSE local memory)

Processing New Floppy Disk

Insert a new floppy disk onto the PSE.

Display Floppy Menu Screen by pressing the **F/D** key.

Press the **6** key for formatting.

When the formatting process is completed. The disk can be used to save a program.

Saving Program

Insert a formatted and initialized floppy disk into the PSE.

Press the **F/D** key to display the Floppy Menu screen.

Press the **2** key to perform the write function.

Press the **CLS** key.

Perform Compare to confirm the save by pressing the **5** key.

Loading Program

Insert a floppy disk containing a program.

Press the **F/D** key to display the Floppy Menu screen.

Press the **1** key to perform File Search to confirm the file name exist.

Press the **CLS** key.

Press the **3** key to perform the read function.

Press the **CLS** key.

Perform Compare to confirm the load by pressing the **5** key.

## 6.4 File Search (DIRECTORY)

### 6.4.1 All files search

(STEP 1)

```
FLOPPY MENU
KEY IN NO. = ■ (CLS)
```

[1] Select "DIRECTORY" on the Floppy Menu screen. Press the **1** key.

(STEP 2)

```
DIRECTORY
F -NAME = ■ (SET)
```

[2] Specify Search for All Files.

**SET** ... Displays a file list.  
**CLS** ... Ends the process, returning to Floppy Menu screen



(STEP 3)

```
DIRECTORY
[Message]
[ ]
```

[3] A file name list is displayed. There are two messages:

(i) **END:KEY IN=[CLS/RTY]**  
 Means all files on the floppy disk are displayed.

**CLS** ... Ends the process.  
**RTY** ... Performs this process again. To [STEP2]



```
Floppy Menu
```

Free space in Floppy Disk

(ii) **NEXT;KEY IN=[CNT/RTY/CLS]**  
 Means some files on the floppy disk are not displayed here.

```
DIRECTORY (F=116kW)
1 : PSEHEAD .PSE
2 : CAR00 .PSE
3 : CAB01 .PSE
4 : CAB01 .S10
5 : CAB01 .CMT
```

User creation file name (The maximum display is 18 files).

**CNT** ... Displays the names of the remaining files.

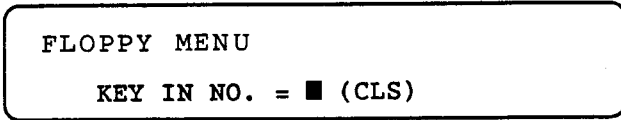
**RTY** ... Performs this process again. To [STEP2]

**CLS** ... Ends the process, going to the Floppy Menu screen.



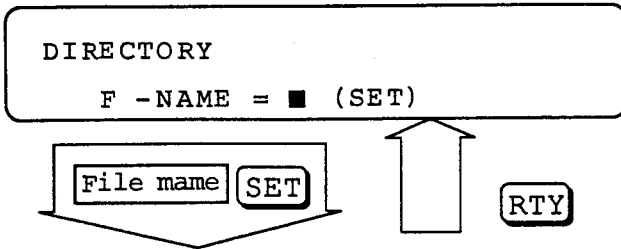
6.4.2 Header search

(STEP 1)



[1] Select "DIRECTORY" on the Floppy Menu screen. Press the **1** key.

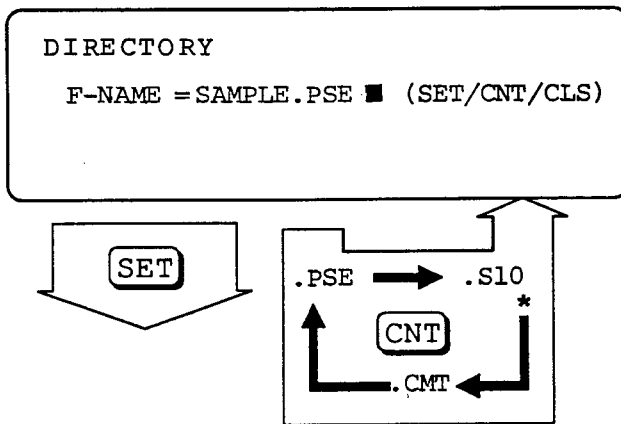
(STEP 2)



[2] Specify a file name.



(STEP 3)



[3] Confirmation/Change of file type

- SET** ... When the correct type is displayed.
- CNT** ... To change a file type. (Types, .PSE/.S10\*/.CMT, are displayed cyclically.)
- RTY** ... To change a file name. To [STEP2]
- CLS** ... To end the process and Return to Floppy Menu screen

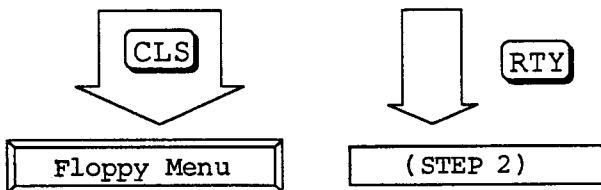
\* "S.10" may not be found with some type of PCS.

## 6 FLOPPY DISK INPUT/OUTPUT

---

(STEP 4)

```
DIRECTORY
END:KEY IN = ■ (CLS/RTY)
-----
PSE FILE HEADER
-----
FILE NAME: SAMPLE.PSE
PCs NO.      : 0001
PCs TYPE     : 00F2
Y-M-D-H     : 86-11-17-18
COMMENT      : HEADER TEST
FILE SIZE    : 066-(K-WORD)
ADDRESS = /060000- /060FFE
ADDRESS = /063000- /07FFFE
```



[4] File header is displayed.

**CLS** ... To end the process and Return To Floppy Menu screen.

**RTY** ... To try this process again.  
To [STEP2]

- The contents of the header being displayed differs depending on the type of a file.

## 6.5 Writing: Save (PCs → FLOPPY)

### 6.5.1 Ladder program save (Standard)

(STEP 1)

```
FLOPPY MENU
KEY IN NO. = ■ (CLS)
```

- [1] Select "PCs-- FLOPPY" on the Floppy Menu screen. Press the **2** key.

(STEP 2)

```
PCS →FLOPPY
KEY IN NEXT DATA (CLS)
PSE FILE HEADER
FILE NAME : ..... ①
PCS NO.   :0001 ..... ②
PCS TYPE  :00F2
Y-M-D-H   : ..... ③
COMMENT   : ..... ④
```

- [2] Create the File header.

- ① Enter a file name.

**S A M P L E SET**

(File name)

- A file name must be a character string of up to 8 characters beginning with an English letter.

- ② Confirm/change the PCs No.

- SET** ... When the correct PCs No. is displayed. To change the number enter as follows:

**0 0 0 1 SET**

PCs No.

- ③ Enter the date/time of creation.

**8 6 1 1 2 0 1 7**

(Year) (Month) (Day) (Hour)

- Must be entered in 2 digits of decimal notation.



(STEP 3)

## 6 FLOPPY DISK INPUT/OUTPUT

---

- ④ Enter a comment.

C O M M E N T SET

(Comment data)

- A comment can be a maximum of 16 characters.
- The process is ended if the following keys are pressed in ① ~ ④ :

<b>CLS</b>	... To Floppy Menu screen
<b>RTY</b>	... The cursor moves backs one character. If the cursor is at the beginning of a line, control is returned to the preceding process.

- [3] Confirmation and change of Address

(STEP 3)

PCS→FLOPPY

HEADER OK ? ■ (SET/CNT/RTY/CLS)

PSE FILE HEADER

FILE NAME : SAMPLE.PSE

PCS NO. : 0001

PCS TYPE : 00F2

Y-M-D-H : 86-11-20-17

COMMENT : COMMENT

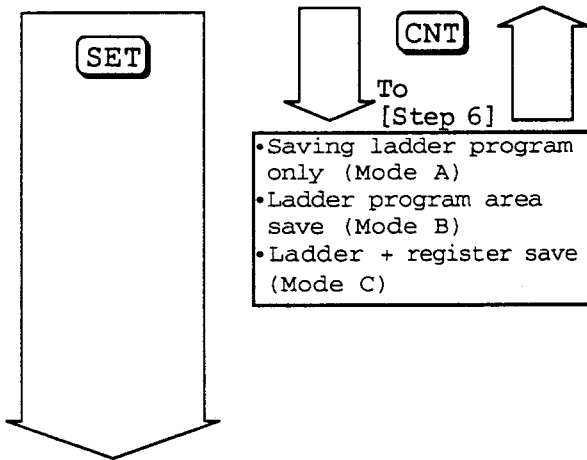
FILE SIZE : 036(K-WORD)

(File size)

ADDRESS=/060000-/071FFE

(Program save area address)

(Example of ladder program end address)



**SET** ... Begins the creation of file according to the contents of the header being displayed.

**CNT** ... Press to change the address. Goes to [STEP 6]

**RTY** ... Press to modify the header.

**CLS** ... Ends the process. Floppy Menu screen appears.

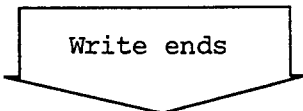
- When going from [STEP 2] to [STEP 3], the address area used is the "ladder program standard address area".

(STEP 4)

```

PCS→FLOPPY
  Access address
START PCS→FLOPPY ADDRESS=/063A00
    
```

[4] Execution of program save Stores the specified address area data on a floppy disk. The address being accessed at any given time is displayed as shown in the figure.



(STEP 5)

```

PCS→FLOPPY
SUCCESS ■ (CNT/CLS)
    
```

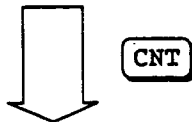
[5] "SUCCESS" appears when the save ends normally.

**CLS** ... Ends the process.

**CNT** ... Press to try this process again. To [STEP 2]



Floppy Menu .



(STEP 2)

## 6 FLOPPY DISK INPUT/OUTPUT

(STEP 6)

PCS→FLOPPY

SELECT A/B/C OR SET ADDRESS DATA [SET]

ADDRESS MENU	PSE FILE HEADER
A : SEQUENCE PROG.	FILE NAME : SAMPLE.PSE
B : SEQUENCE ALL	PCS NO. : 0001
C : SEQUENCE +WORK	PCS TYPE : 00F2
	Y-M-D-H : 86-11-20-17
	COMMENT : COMMENT
	FILE SIZE : 0036 (K-WORD)
	ADDRESS = /060000 - /071FFE

- A** : SEQUENCE PROG. ----- Ladder program (vacant areas of the program, not included)
- B** : SEQUENCE ALL ----- The entire ladder program (including vacant areas of the program) and data register (D)
- C** : SEQUENCE + WORK ----- The entire ladder program (including vacant areas of the program), data register (D), function work register (F), and base register (B)
- SET** : ----- To select any memory area to be saved.

### 6.5.2 Saving ladder program only (Mode A)

This process is performed by pressing the **CNT** key in [STEP 3] ('Confirmation and change of address') and then the **A** key in [STEP 6] in "6.5.1 Saving a ladder program (Standard)".

(STEP 6-A)

```
ADDRESS = /060000 - /060FFE
ADDRESS = /063000 - /07FFFE
ADDRESS = /      - /
```



To (STEP 3)

[6-A] Only the ladder program as it is displayed. (Created portion, only)

**SET** ... To [STEP 3] of 6.5.1

For optional address input refer to 6.5.5

### 6.5.3 Saving ladder program area (Mode B)

This process is performed by pressing the **CNT** in [STEP3] ('Confirmation and change of address') and then the **B** key in [STEP 6] of "6.5.1 Saving a ladder program (Standard)".

(STEP 6-B)

```
ADDRESS = /060000 - /07FFFE
ADDRESS = /
```



To (STEP 3)

[6-B] The entire ladder program (including vacant area in program) end the data register (D)

**SET** ... To [STEP 3] of 6.5.1

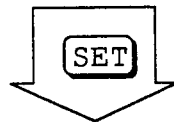
For optional address input refer to 6.5.5

### 6.5.4 Saving ladder + register (Mode C)

This process is performed by pressing the **CNT** in [STEP 3] ('Confirmation and change of address') and then the **C** key in [STEP 6] of "Saving a sequence program (Standard)".

(STEP 6-C)

```
ADDRESS = /060000 - /07FFFE
ADDRESS = /0E2000 - /0E3FFC
ADDRESS = /
```



To (STEP 3)

[6-C] The entire ladder program (including vacant area in program) the data register (D), function work register (F), and base register (B).

**SET** ... To [STEP 3] of 6.5.1

For optional address input refer to 6.5.5

## 6 FLOPPY DISK INPUT/OUTPUT

### 6.5.5 Saving specified memory area

This process is performed by pressing the **CNT** in [STEP 3] ('Confirmation and change of address') of "6.5.1 Saving a ladder program (Standard)".

(3-1)

ADDRESS = / ■ - /

[3-1] Entering the address  
Enter the addresses in order following the method shown below.

#### Input of Address

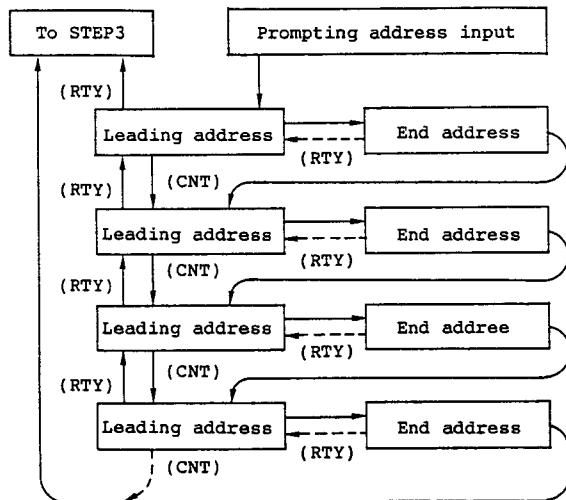
- Enter the address in 6 digits of hexadecimal notation.

1 3 3 0 0 0 SET

(Address data)

Flow of Address Change Processing

Up to 4 different areas may be specified.





[Supplementary Description]

Example 1:

Saving a sequence program including the data register (D) area and the expansion memory (Address /1000 - /13FFFE) in the same file

<b>B</b>	(Address Menu No. (STEP 6))						
<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>SET</b>	(Leading address)
<b>1</b>	<b>3</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>E</b>	<b>SET</b>	(Last address)
<b>SET</b>	(Data entry complete)						

ADDRESS = /060000 - /07FFFE  
 ADDRESS = /100000 - /13FFFE

Example 2:

Saving only the expansion memory (Address /140000 - /14FFFE) in a file

<b>SET</b>	(Save a specified memory area) (STEP 6)						
<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>SET</b>	
<b>1</b>	<b>4</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>E</b>	<b>SET</b>	
<b>SET</b>	(Data entry complete)						

ADDRESS = /140000 - /14FFFE

## 6.6 Reading: Load (Floppy Disk → PCs)

### 6.6.1 Load without address specified

(STEP 1)

```
FLOPPY MENU
KEY IN NO. = ■ (CLS)
```

[1] Select "FLOPPY-- PCS" on the Floppy Menu screen. Press the **3** key.

(STEP 2)

```
FLOPPY→PCS
F-NAME = ■
```

[2] Specify the name of a file to be loaded.

**S** **A** **M** **P** **L** **E** **SET**

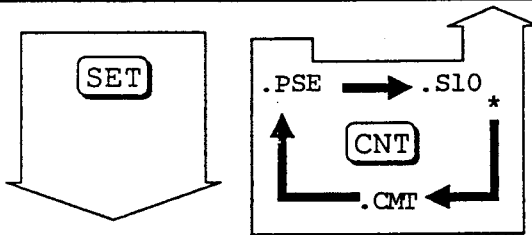
(File name)



(STEP 3)

```
FLOPPY→PCS
F-NAME = SAMPLE.PSE ■ (SET/CNT/RTY/CLS)
```

[3] Confirm/modify the file type.



- SET** ... Press if set correctly.
- CNT** ... Press to change a file type.
- RTY** ... Press to change a file name.
- CLS** ... Press to end the process. The Floppy Menu appears.

\* ".S10" is not found in some type of PCs.

(STEP 4)



RTY

```

FLOPPY→PCS
HEADER OK? (SET/CNT/RTY/CLS)
-----
PSE FILE HEADER
-----
FILE NAME : SAMPLE.PSE
PCS NO.   : 0001
PCS TYPE  : 00F2
Y-M-D-H   : 86-11-17-18
COMMENT   : LOADING TEST
FILE SIZE : 066(K-WORD)
ADDRESS = /060000 - /060FFE
ADDRESS = /063000 - /07FFFE
    
```

[4] Confirm the header.

SET

... Press if set correctly.

RTY

... Press to change a file name. To [STEP 2]

CNT

... Press to change the address. To 6.5.2

- Address change is permitted only when there is one line of address is specified.



(STEP 5)



Loading with addressing

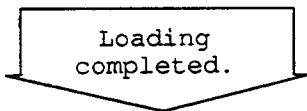
(STEP 5)

```

FLOPPY→PCS
START FLOPPY→PCS ADDRESS = /063A00
    
```

[5] Execution of loading

Data in a specified file is loaded to the PCs. The address being accessed at any time is displayed as shown in the figure.



(STEP 6)

```

FLOPPY→PCS
SUCCESS ■ (CNT/CLS)
    
```

[6] Confirming the end of loading



Floppy Menu

(STEP 2)

CLS

... Press to end the loading.

CNT

... Press to retry the loading. To [STEP 2]

## 6 FLOPPY DISK INPUT/OUTPUT

### 6.6.2 Load with address specified

Press the **CNT** key in [STEP 4] of 6.6.1.

(STEP 4-1)

```
ADDRESS = /0E2000 - /0E27FE
***** NEW ADDRESS *****
ADDRESS = /0E3000 - /0E37FF
```

[4-1] Specify an address

Enter the leading address.

**E** **3** **0** **0** **0** **SET**

(Leading address)

The last address is automatically calculated. To [STEP 4] of 6.5.1.

[Supplementary Description]

Changing loading address

① [Supplementary Description]

```
ADDRESS = /060000 - /07FFFE
ADDRESS = /0E2000 - /0E37FF
ADDRESS = /0E0000 - /0E1FFE
```

②

```
ADDRESS = /060000 - /07FFFE
ADDRESS = /0E2000 - /0E37FE
```

③

```
ADDRESS = /061000 - /062FFF
```

Address change at loading is permitted only when only 1 line of address is specified.

- ① and ② ... Change not permitted
- ③ ... Change permitted

This function is useful for instance, to move the data of a computer mode program to another area.

#### Note:

Be careful not to load to the PCs system area when changing the load address. It may cause the malfunction of the PCs or a circuit error may occur.

### 6.7 Deleting File (File Erase)

(STEP 1)

```
FLOPPY MENU
KEY IN NO. = ■ (CLS)
```

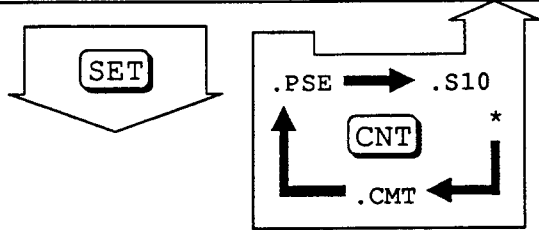
(STEP 2)

```
FILE ERESE
F-NAME = ■
```



(STEP 3)

```
FILE ERESE
F-NAME=SAMPLE.PSE ■ (SET/CNT/RTY)
```



[1] Select "FLOPPY-- PCS" on the Floppy Menu screen. Press the **4** key.

[2] Enter the name of a file to be deleted.

**S** **A** **M** **P** **L** **E** **SET**  
File name

[3] Confirming/changing file type

- SET** ... Press when set correctly.
- CNT** ... Press to change the file type. (Changes to .PSE/.S10\*/.CMT, cyclically)
- RTY** ... Press to change a file name. To [STEP 2]
- CLS** ... Press to end the process. To Floppy Menu screen

\* ".S10" is not found in some types of PCs.

## 6 FLOPPY DISK INPUT/OUTPUT

---

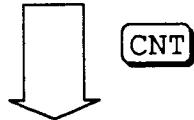
(STEP 4)

```
FILE ERASE
FILE ERASE OK? ■ (DEL/RTY/CLS)
  PSE FILE HEADER
FILE NAME : SAMPLE.PSE
PCS NO.   : 0001
PCS TYPE  : 00F2
Y-M-D-H   : 86-11-17-18
COMMENT   : ERASE TEST
FILE SIZE : 066 (K-WORD)
ADDRESS = /060000 - /060FFE
ADDRESS = /063000 - /07FFFE
```



(STEP 5)

```
FILE ERASE
ERASE OK ■ (CNT/CLS)
```



Floppy Menu

(STEP 2)

[4] Confirming the file header

- [DEL] ... Deletes the specified file.
- [RTY] ... To change the file name. To [STEP 2]
- [CLS] ... Ends the process. To Floppy Menu screen

[5] Completes the deletion

- [CLS] ... Ends the process. To Floppy Menu screen
- [CNT] ... Retries this process. To [STEP 2]

### 6.8 Compare (PCs <> FLOPPY)

(STEP 1)

FLOPPY MENU  
KEY IN NO. = ■ (CLS)

- [1] Select "COMPARE PCS <>FLOPPY" on the Floppy Menu screen. Press the **5** key.

(STEP 2)

COMPARE  
F-NAME = ■



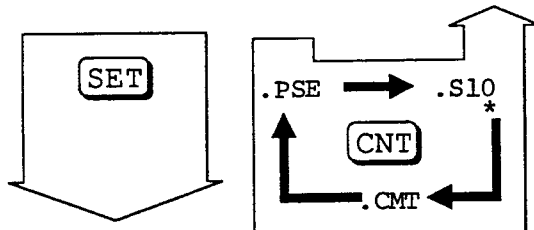
- [2] Specify a file name to be compared as follows:

**S** **A** **M** **P** **L** **E** **SET**  
(File name)

(STEP 3)

COMPARE  
F-NAME = SAMPLE.PSE ■ (SET/CNT/RTY)

- [3] Confirming/changing file type



- SET** ... Press when set correctly.
- CNT** ... Changes the file type.
- RTY** ... To change the file name. To [STEP 2]
- CLS** ... Ends the process. To Floppy Menu screen

\* ".S10" may not be found in some types of PCs.

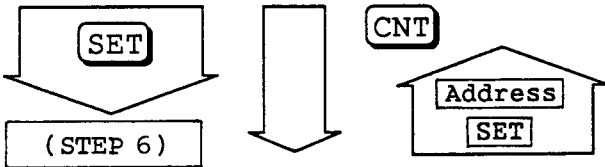
## 6 FLOPPY DISK INPUT/OUTPUT

(STEP 4)



```

COMPARE
HEADER OK? (SET/CNT/RTY/CLS)
-----
PSE FILE HEADER
-----
FILE NAME : SAMPLE.PSE
PCS NO.   : 0001
PCS TYPE  : 00F2
Y-M-D-H   : 86-11-17-18
COMMENT   : COMPARE TEST
FILE SIZE : 066(K-WORD)
ADDRESS = /060000 - /070FFE
    
```



(STEP 5)

```

ADDRESS = /060000 - /07FFFE
***** NEW ADDRESS *****
ADDRESS = /      - /
    
```

[4] Confirming the contents of header

- [SET] ... Press when the header is displayed correctly. To [STEP 6]
- [RTY] ... To change the file name To [STEP 2]
- [CNT] ... To change the address.
  - Address change is permitted only when there is only one line of address.
- [CLS] ... Ends the process. To Floppy Menu screen

[5] Change the address

Enter the leading address.

**E 1 0 0 0 SET**

(Leading address)

The last address is automatically calculated.



(STEP 6)  
[Circuit mode]

COMPARE  
LADDER COMPARE ■ (SET/CNT/CLS)



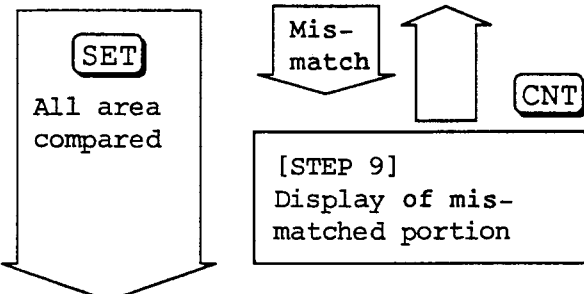
[Machine language mode]

COMPARE  
DATA COMPARE (SET/CNT/CLS)



(STEP 7)

COMPARE  
COMPARE START



(STEP 8)

(When all area matched)

COMPARE  
COMPARE OK ■ (CNT/CLS)

(When mismatched portion was found)

COMPARE  
COMPARE END ■ (CNT/CLS)



Floppy Menu



(STEP 2)

[6] Specifying a compare mode

LADDER COMPARE:  
Displays a circuit diagram, when a mismatch is detected.

DATA COMPARE:  
Displays machine language, when a mismatch is detected.

- [SET] ... Starts compare in the selected mode.
- [CNT] ... Changes the compare mode.
- [CLS] ... Ends the process. To Floppy Menu screen

[7] Execution of compare

While the compare process is executing the address being accessed is displayed, as shown in the figure.

[8] Confirming end of comparison

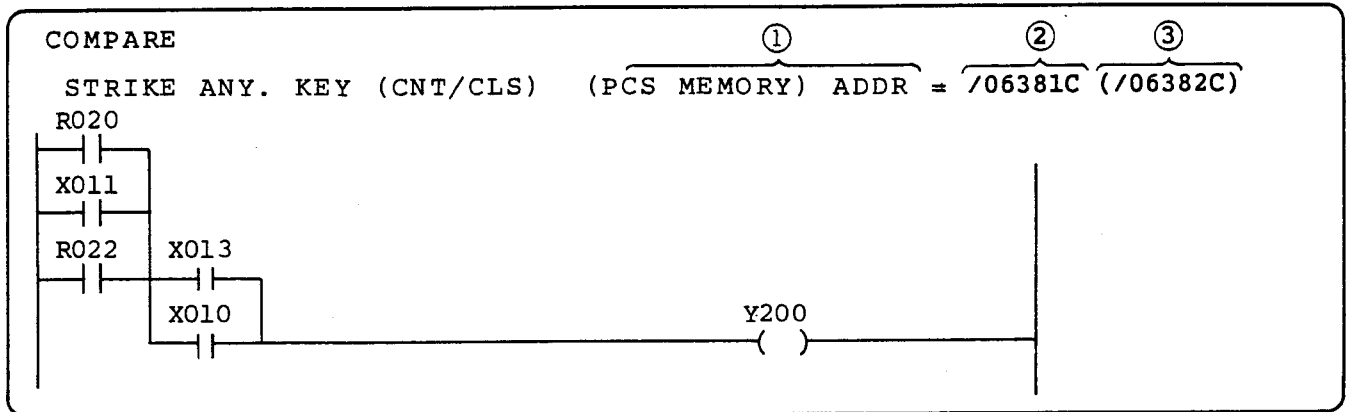
One of two messages are displayed upon completion of comparison as shown in the figure:

- [CLS] ... Ends the process. To Floppy Menu screen
- [CNT] ... Retries this process. To [STEP 2]

## 6 FLOPPY DISK INPUT/OUTPUT

[STEP 9] Display of mismatched portion

[Example of Display in Circuit Diagram Mode]



- ① ... Means that the contents of the PCs memory is displayed at present. (\*\*FLOPPY\*\* appears when the contents of the floppy disk is displayed.)
- ② ... The leading address of the mismatched circuit (In the above example, + R020)
- ③ ... The address of the mismatched instruction word (In the above example, + R020)

[Example of Display in Machine Language Mode]

```

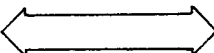
COMPARE
STRIKE ANY KEY ■ (CNT/CLS)
COMPARE ERROR ON PCS MEMORY ADDRESS=/063C20
***** PCS MEMORY DATA *****
/063C00 0050 0000 0050 0000 0050 0000 0050 0000
/063C10 0050 0000 0050 0000 0050 0000 0050 0000
/063C20 0050 0000 0050 0000 0050 0000 0050 0000
/063C30 0050 0000 0050 0000 0050 0000 0150 0000
/063C40 0000 0000 0000 0000 0000 0000 0000 0000
/063C50 0000 0000 0000 0000 0000 0000 0000 0000
/063C60 0000 0000 0000 0000 0000 0000 0000 0000
/063C70 0000 0000 0000 0000 0000 0000 0000 0000
    
```

- ① ... Indicates the first mismatched address.
- ② ... Indicates that the contents of the PCs memory is displayed at present.

CNT ..... Restarts compare starting at the next address.

CLS ..... Ends the process. To Floppy Menu screen

Other keys .. Press to change the contents of the display.

Contents of PCS  Contents of Floppy Disk

- Display is made in the machine language mode, even in circuit diagram mode in the following cases:
  1. Areas other than the ladder program area
  2. Either one of the programs is destroyed.
  3. Display as a circuit is not possible.

6.9 Formatting (FORMATTING 3.5-inch)

(STEP 1)

```
FLOPPY MENU
KEY IN ON. = ■ (CLS)
```

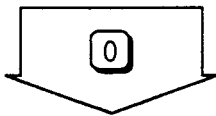
(STEP 2)

```
3.5 - FORMATTING
DISK SET OK? (SET/CLS)
```



(STEP 3)

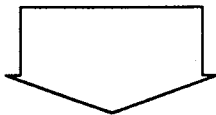
```
3.5 - FORMATTING
REALLY? (YES = 0)
```



(STEP 4)

(Display during execution)

```
3.5 - FORMATTING
FORMATTING START TRACK = xxx
```

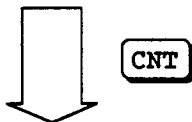


(End Screen)

```
3.5 - FORMATTING
SUCCESS (CNT/CLS)
```



```
Floppy Menu
```



```
(STEP 2)
```

[1] Select "FORMATTING" on the Floppy Menu screen. Press the **6** key.

[2] Confirm floppy disk has been inserted

- [SET] ... Press when inserted correctly.
- [CLS] ... Press to end the process. To Floppy Menu screen

[3] Reconfirming

- [0] ..... Starts formatting.
- [Any other key] ... Ends the process. To Floppy Menu screen

[4] The formatting is executed. As can be seen from the figure, the track being formatted (00-153) is shown during the formatting.

- [CLS] ... Ends the process. To Floppy Menu screen
- [CNT] ... Restarts formatting process. To [STEP 2]

### 6.10 Initialize (DISK INITIALIZE)

(STEP 1)

```
FLOPPY MENU
KEY IN ON. = ■ (CLS)
```

[1] Select "DISK INITIALIZE" on the Floppy Menu screen. Press the **7** key.

(STEP 2)

```
INITIALIZE
FLOPPY OK? (SET/CLS)
```

[2] Confirming floppy disk setting (insertion)

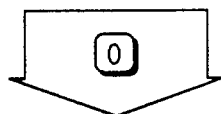


**SET** ... Press when set correctly.  
**CLS** ... Press when to end the process. To Floppy Menu screen

(STEP 3)

```
INITIALIZE
REALLY ? ■ (YES = 0)
```

[3] Reconfirming



**0** ..... Starts initializing.  
**Any other key** ... Ends the process. To Floppy Menu screen

(STEP 4)

(Display during execution)

```
INITIALIZE
INITIALIZE START
```

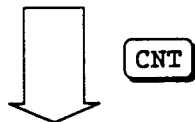
[4] The initialization is executed with the message as shown in the figure.



**CLS** ... Ends the process. To Floppy Menu screen  
**CNT** ... Restarts initialization. To [STEP 2]

(End Screen)

```
INITIALIZE
INITIALIZE OK ■ (CNT/CLS)
```



Floppy Menu

(STEP 2)

6.11 File Copy (FILE COPY)

(STEP 1)

```

FLOPPY MENU
KEY IN NO. = █ (CLS)
    
```

[1] Select "FILE COPY" on the Floppy Menu screen. Press the **8** key.

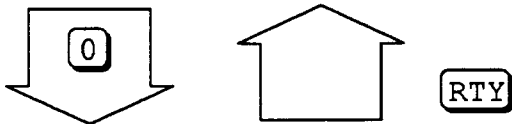
(STEP 2)

```

-----
SOURCE FILE
-----
DRIVE NO.   =
FILE NAME   =
( 0 : FLOPPY  1 : RAM DISK )
-----
      ↓
-----
DESTINATION FILE
-----
DRIVE NO.   =
FILE NAME   =
-----
    
```

[2] Enter the drive No. (0--1) of the copy source. Pressing the **0** key at this point displays "FLOPPY DISK", and the **1** key, "RAM DISK".

This is true also for entering the drive No. of the copy destination. Press the **0** key.



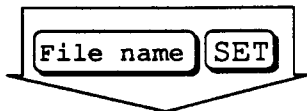
(STEP 3)

```

-----
SOURCE FILE
-----
DRIVE NO.   = FLOPPY
FILE NAME   =
-----
      ↓
-----
DESTINATION FILE
-----
DRIVE NO.   =
FILE NAME   =
-----
    
```

[3] Enter the file name of the copy source.

**S M P L SET**



To (STEP 4)



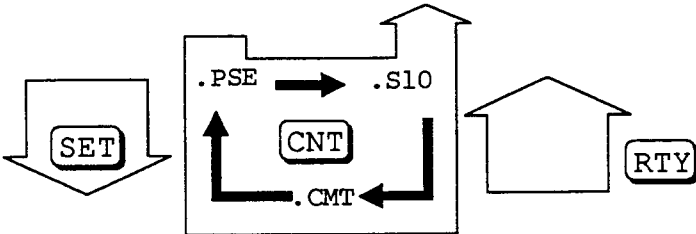
(STEP 4)

```

-----
                SOURCE FILE
-----
DRIVE NO.   = FLOPPY
FILE NAME   = SMPL   .PSE
FILE TYPE OK? (SET/CNT/RTY)
-----
                ↓
-----
                DESTINATION FILE
-----
DRIVE NO.   =
FILE NAME   =
-----
    
```

[4] Confirming/Changing file type

- [SET] ... Press when file type is displayed correctly.
- [CNT] ... Changes a file type. (Steps through .PSE/.S10/.CMT cyclically)
- [RTY] ... To change the file name. To [STEP 3]
- [CLS] ... Ends the process. To Floppy Menu screen



(STEP 3)

```

-----
                SOURCE FILE
-----
DRIVE NO.   = FLOPPY
FILE NAME   = SMPL   .CMT
-----
                ↓
-----
                DESTINATION FILE
-----
DRIVE NO.   =
FILE NAME   =
( 0 : FLOPPY   1 : RAM DISK )
-----
    
```

[5] Enter the drive No. of the copy destination (0--1). Press the **1** key.



To (STEP 6)

## 6 FLOPPY DISK INPUT/OUTPUT

To (STEP 5)

(STEP 6) RTY

-----  
SOURCE FILE  
-----

DRIVE NO. = FLOPPY  
FILE NAME = SMPL .PSE

-----  
↓  
-----

DESTINATION FILE  
-----

DRIVE NO. = RAM DISK  
FILE NAME =

-----

[6] Enter the file name of the copy destination.

S M P L R A M SET

File name SET

↑

RTY

(STEP 7)

COPY DATA OK ? (SET/RTY/CLS)

-----  
SOURCE FILE  
-----

DRIVE NO. = FLOPPY  
FILE NAME = SMPL .CMT

-----  
↓  
-----

DESTINATION FILE  
-----

DRIVE NO. = RAM DISK  
FILE NAME = SMP LRAM .CMT

-----

[7] Confirming input data

- [SET] ... Press when set correctly.
- [RTY] ... Press to change the file name. To [STEP 6]
- [CLS] ... Ends the process. To Floppy Menu screen

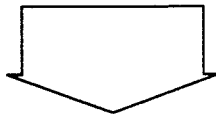
SET



(STEP 8)

```

START COPY
-----
SOURCE FILE
-----
DRIVE NO.  = FLOPPY
FILE NAME  = SMPL   .CMT
REMAINS    = 0008 ( kW )
-----
          ↓
DESTINATION FILE
-----
DRIVE NO.  = RAM DISK
FILE NAME  = SMPLRAM .CMT
REMAINS    = 0008 ( kW )
-----
    
```



(STEP 9)

(STEP 9)

```

COPY OK ! (CNT/CLS)
-----
SOURCE FILE
-----
DRIVE NO.  = FLOPPY
FILE NAME  = SMPL   .CMT
REMAINS    = 0000 ( kW )
-----
          ↓
DESTINATION FILE
-----
DRIVE NO.  = RAM DISK
FILE NAME  = SMPLRAM .CMT
REMAINS    = 0000 ( kW )
-----
    
```



Floppy Menu



(STEP 2)

[8] Copying starts.

[9] If the copy succeeds, "COPY OK" appears in the upper left corner of the screen.

- [CLS] ... Press to end the process. To Floppy Menu screen
- [CNT] ... Press to start the copy again. To [STEP 2]

### 6.12 Drive Selection (DRIVE SELECT)

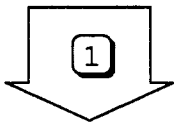
(STEP 1)

FLOPPY MENU  
KEY IN NO. = ■ (CLS)

[1] Select "DRIVE SELECT" on the Floppy Menu screen. Press the **9** key.

(STEP 2)

DRIVE NO. = ■ (0 : FLOPPY DISK 1 : RAM DISK)



Floppy Menu

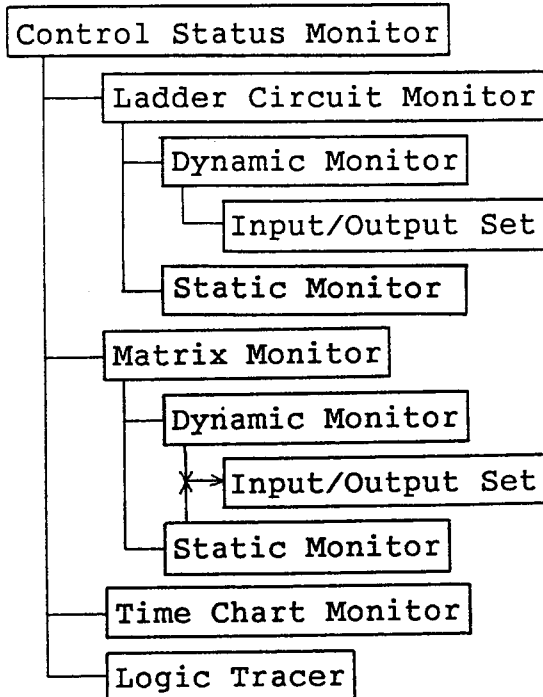
[2] Enter the RAM disk drive No. Press the **1** key.

RAM DISK appears in the right upper portion of the screen, returning control to the Floppy Disk Menu screen.

# 7 CONTROL STATUS MONITOR

### 7.1 Outline of Functions

#### 7.1.1 Function system and monitor screen



#### [1] Ladder Circuit Monitor

##### Monitors

The circuit displayed with the following functions:

- . ON/OFF status of I/O
- . State of continuity (Active line display)
- . Count values of T, U, and C,
- . Current parameter values of data manipulations

This function contains both dynamic and static monitors, and it is also possible to temporarily turn on/off a selected I/O.

#### [2] Matrix Monitor

Monitors a large amount of information (ON/OFF) at a time by arranging each control element, such as a contact, in a matrix form. This function also includes both dynamic and static monitors, and can temporarily turn on/off selected I/O.

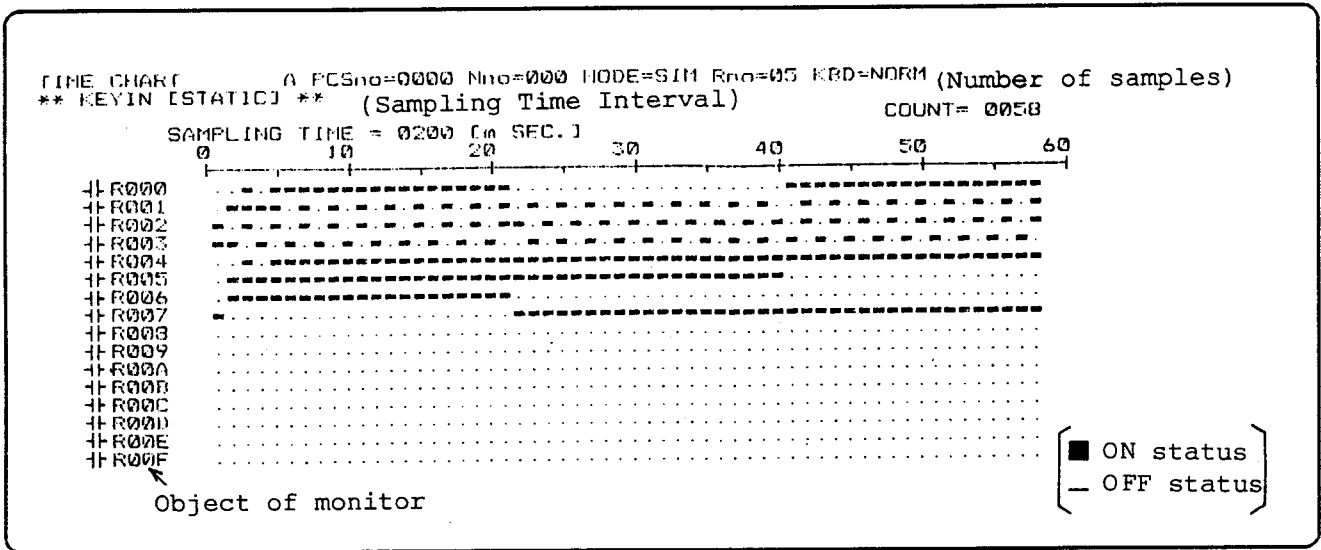
#### [3] Time Chart Monitor

Monitors the change of the on/off status of each control element on a time line.

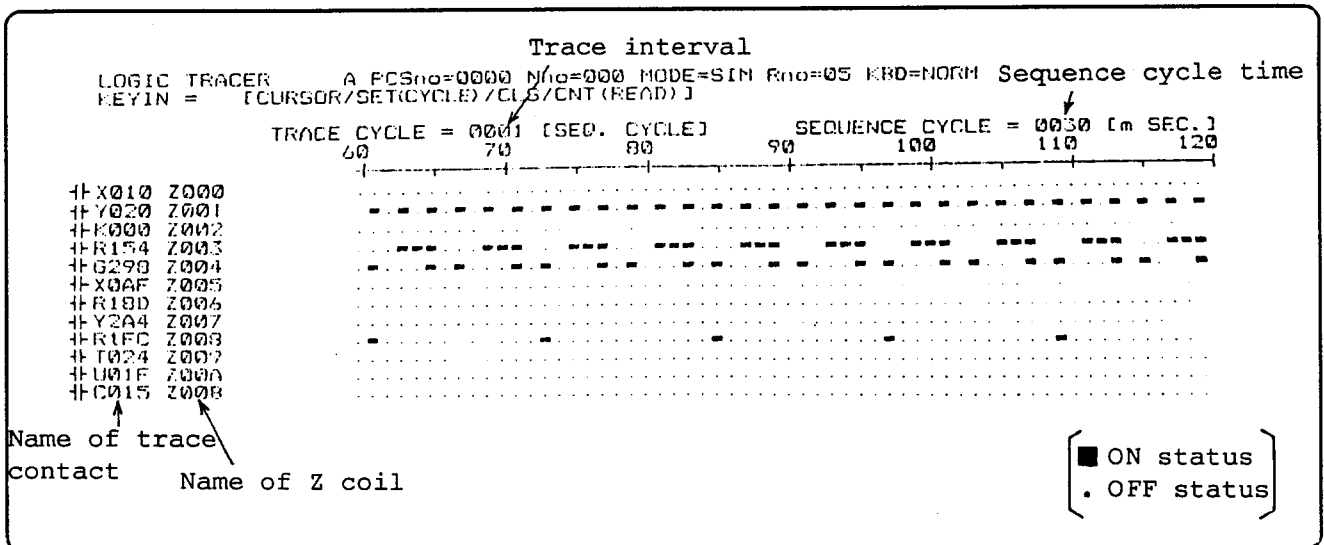


# 7 CONTROL STATUS MONITOR

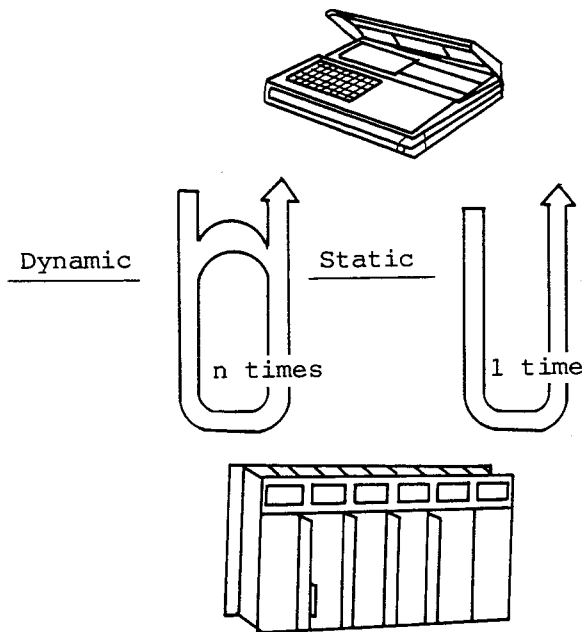
[Time Chart Monitor Screen]



[Logic Tracer Screen]



## 7.1.2 Dynamic monitor and static monitor



Both the circuit and matrix monitors include the dynamic monitor and static monitors.

## [1] Dynamic Monitor

When the **DYNA.** key is pressed, reads and displays the status of each contact continuously until the **STAT.** key is pressed.

## [2] Static Monitor

Reads and displays the status of PCs only once when the **STAT.** key is pressed.

## 7.1.3 Dynamic monitor and input/output setting

The I/O set function is used to temporarily turn ON or OFF the status of a selected control element. This function is very useful when an error occurs during debugging a sequence circuit, etc. This function is initiated if the I/O SET key is pressed during monitoring.

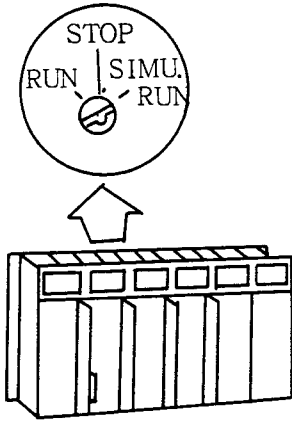
Note:

Since a sequential program takes precedence over the I/O setting, the sequence program may immediately overwrite the status entered by the I/O set function. Thus the status set by I/O set would be effective for only one sequence scan. This case would also be true for "X" inputs that are registered.

## 7 CONTROL STATUS MONITOR

---

### 7.1.4 Input/output setting and simulation



When the PCs is in simulation mode and the PSE is in Matrix Monitor mode, a change made by I/O set will cause a display on the right side of the PSE screen listing the outputs changed and their new status.

### 7.1.5 Control status monitor

- [1] The use of Dynamic monitor while the PSE is in remote status, will place a heavy load on the PCs OS. It is suggested that the system not be left in dynamic monitor mode for long periods of time if it is not necessary.
- [2] Monitoring while the PSE is in local mode is for demonstration. Various patterns are displayed that have no relation to the ladder circuit.
- [3] Dynamic monitor is started by pressing the **DYNA.** key, and accepts either one of the following 5 keys during its processing:

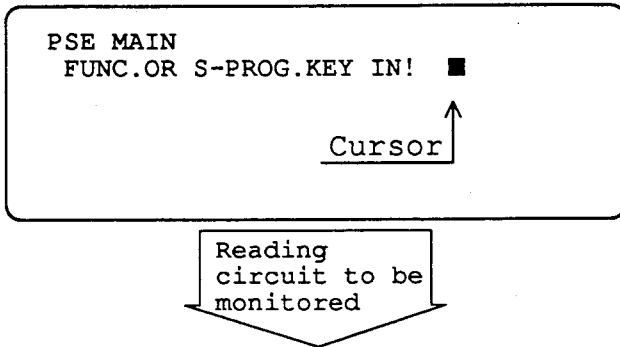
- STAT.** ... Ends the dynamic monitor.
- I/O SET** ... Sets the I/O. (Ladder circuit and Matrix monitors)
- H** or **D** ... Changes the monitor display of data manipulation parameters from Hex to Decimal. (Ladder circuit monitor)
- COPY** ... Outputs the monitor screen to the printer.
- SCREEN** ... Continues monitoring alternating A and B screens.



## 7.2 Ladder Circuit Monitor

### 7.2.1 Dynamic monitor and static monitor

[1] PSE main Screen

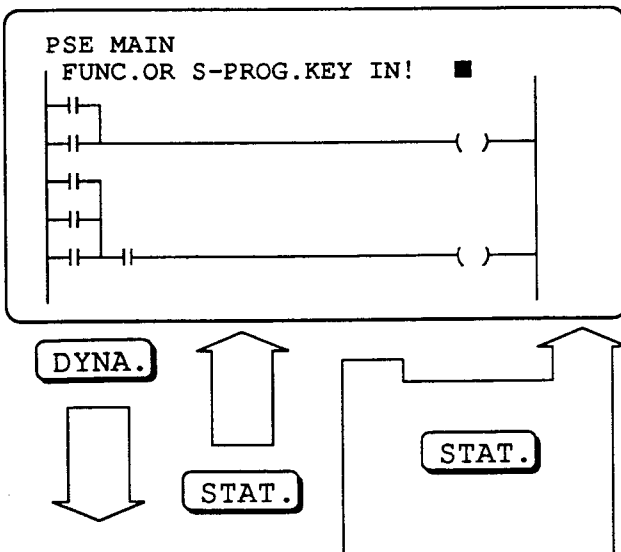


[1] Read a circuit

To read a circuit to be monitored on the "PSE Main" screen, press the following keys:

- SEARCH** ... To read a circuit by specifying a coil
- LAST** ... To read the last circuit
- ↓** ... To read the next circuit in sequence from the last circuit displayed.
- ↑** ... To read the preceding circuit in sequence from the last circuit displayed.

[2] PSE MAIN Screen  
(Circuit exists)

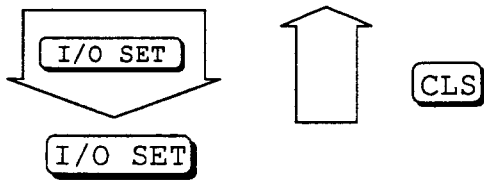
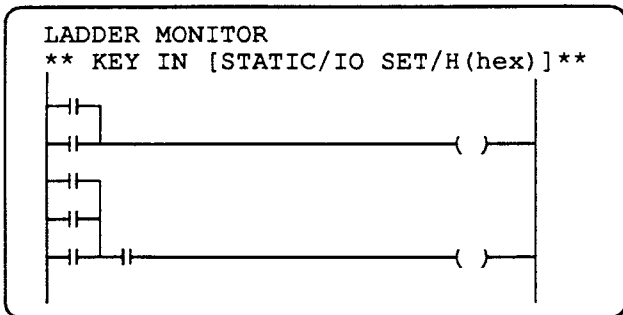


[2] Starting monitor

- DYNA.** ... Starts dynamic monitor.
- STAT.** ... Displays the status of the circuit at the time when this key is pressed. Then, returns to the "FUNC KEY IN" status.

## 7 CONTROL STATUS MONITOR

[3]



[3] Monitor screen

To end dynamic monitor:

**STAT.** ... Press the STAT. key.

**I/O SET** ... Pressing the I/O SET key puts the screen in "I/O Set" mode.

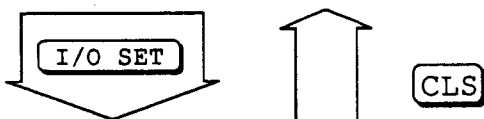
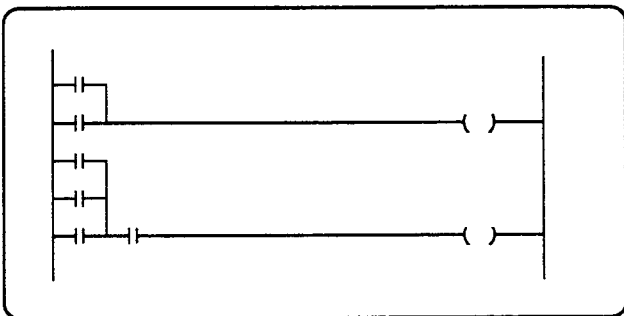
If the **H** or **D** key is pressed, the display of the current values of data manipulation parameters are changed as follows:

Decimal notation -- Hexadecimal notation  
(**H**)

Hexadecimal notation -- Decimal notation  
(**D**)

### 7.2.2 Input/output setting (coil and contact)

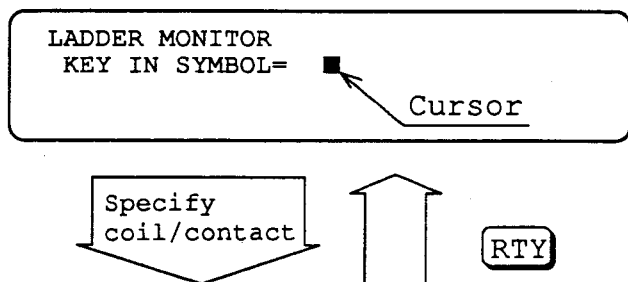
[1] Dynamic monitor screen



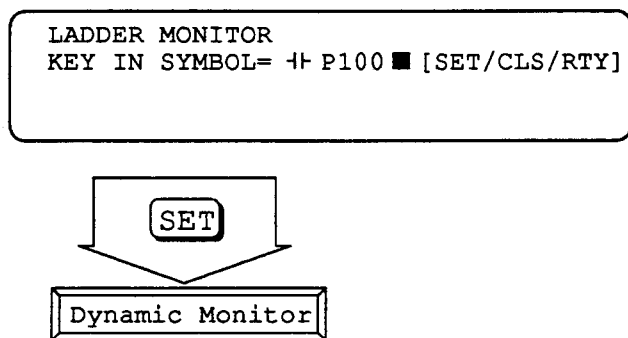
[1] Initiate the I/O set mode.

Press the **I/O SET** key while in the dynamic monitor mode.

[2] Input output set screen



[3]



[2] Enter the name of the coil/contact.

To toggle the status of R100, a contact, enter

**[+]** **[R]** **[1]** **[0]** **[0]**

**[CLS]** ... Returns to dynamic monitor immediately.

**[CNT]** ... Displays the latest monitor status.

[3] Check the present status.

The present status of a specified control element is shown as follows:

Normal display ... "OFF" at present

Inverted display ... "ON" at present

**[SET]** ... Toggles the present status.  
(ON → OFF OFF → ON)  
Goes to [2] after displaying the latest monitor status

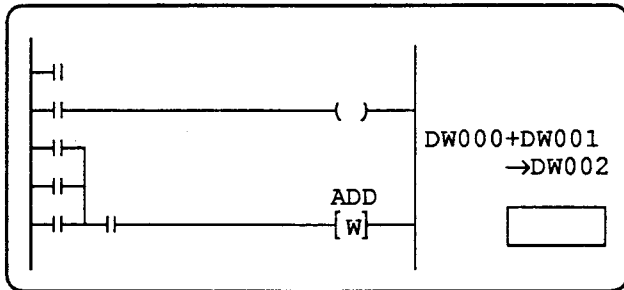
**[RTY]** ... Press to change a control element name.  
Goes to [2]

**[CLS]** ... Returns to dynamic monitor with no action.

## 7 CONTROL STATUS MONITOR

### 7.2.3 Input/output set (Data manipulation parameter)

[1] Dynamic Monitor Screen



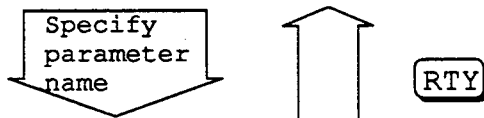
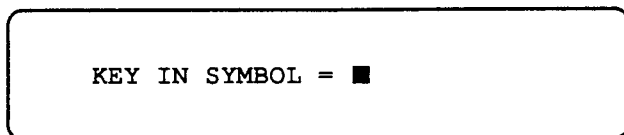
[1] Initiate I/O set mode.

Press the **I/O SET** key while in dynamic monitor mode.

←Parameter

Monitor the value of the result of the data manipulation

[2] I/O Setting



[2] Enter a parameter name.

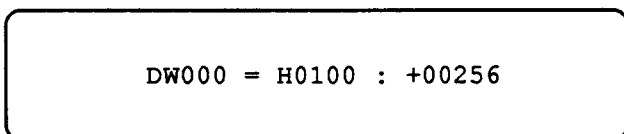
To change the contents of DW000 (16 bits):

Enter **D** **W** **0** **0** **0** **SET** .

**CLS** ... Returns to dynamic monitor immediately.

**CNT** ... Displays the latest monitor status.

[3]



[3] Confirm present status

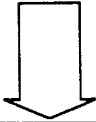
The present status of a specified parameter is shown on the right of the monitor field as shown below:

DW000=H0100:+00256

(Hexa- (Deci-  
decimal) mal)

[4]

KEY IN DATA = ■



Dynamic Monitor

[4] Enter data

- 1 0 0 SET Example 1  
(Decimal data)

3 8 4 SET Example 2  
(Decimal data)

H 1 8 0 SET Example 3  
(Hexadecimal data)

To [2] after the display of the latest monitor status

RTY ... Press to change a parameter name. Goes to [2]

CLS ... Returns control to the dynamic monitor immediately.

#### 7.2.4 Data manipulation parameter setting and monitor

- ① To enter a data manipulation parameter in 32 bits length:

Example:

DW000	16 bit	32 bit
DW001	16 bit	(DW000) (DW001)

Enter D W 0 0 0 !.

The data is entered in 32 bits, if the ! key is pressed after a parameter name. The input of data in decimal notation is limited to a signed decimal number of up to 9 digits in the range of -999,999,999 -- 999,999,999.

- ② To enter a data manipulation parameter in 16 bits length:

The input of data in decimal notation is limited to a signed decimal number of up to 5 digits in the range of -32768 32767.

- ③ The parameter of a data manipulation that contains the result of the data manipulation is displayed with the first character in reverse video. The value of this parameter is monitored and is displayed below the data manipulation parameters.



[3]

```

MATRIX MONITOR
KEY IN SYMBOL = ■
 0 1 2 3 4 5 6 7 8 9 A B C D E F
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○

```



[3] Enter an element name to be monitored as shown by the following example.

**Example:**  
Change X000--X00F, "a" contacts, to Y010--Y01F, outputs.

Enter     .

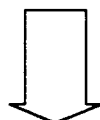
When the entire element name has been entered the cursor (high lighted) automatically moves to the next position and waits for the next element name to be entered.

[4]

```

MATRIX MONITOR
KEY IN SYMBOL = ■
 0 1 2 3 4 5 6 7 8 9 A B C D E F
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
-Y000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○
+X000 ○○○○○○○○○○○○○○○○○○○○○○

```



[4] Start the monitor

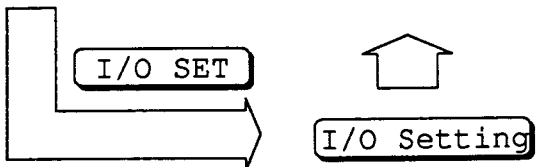
... Starts dynamic monitor.

... Displays the ON/OFF status of the selected elements at the time the  key is pressed. Then returns to "KEY IN SYMBOL". (Goes to [2])

## 7 CONTROL STATUS MONITOR

[5]

MATRIX MONITOR	
KEY IN SYMBOL = ■	
	0 1 2 3 4 5 6 7 8 9 A B C D E F
+ X000	○○○○○○○○○○○○○○○○○○○○
+ X000	○○○○○○○○○○○○○○○○○○○○
+ X000	○○○○○○○○○○○○○○○○○○○○
+ X000	○○○○○○○○○○○○○○○○○○○○
+ X000	○○○○○○○○○○○○○○○○○○○○
- Y000	○○○○○○○○○○○○○○○○○○○○
+ X000	○○○○○○○○○○○○○○○○○○○○
+ X000	○○○○○○○○○○○○○○○○○○○○



[5] Monitor screen

The ON/OFF status of each element is displayed on the dynamic or static screen as shown below:

- ... Element OFF
- ... Element ON

Each row contains a group of 16 elements. For example, the status of elements X000-X00F is shown on the 1st row.

① In dynamic monitor

**STAT.** ... Stops dynamic monitor, establishing static status, and returns control to [2].

**I/O SET** ... Press to make an I/O setting. (To 7.3.2)

### 7.3.2 Input/output setting

[1] Monitor Screen

MATRIX MONITOR	
** KEY IN [STATIC/IO SET] **	
	0 1 2 3 4 5 6 7 8 9 A B C D E F
+ X000	○○○○○○○○●○○○○○○○○○○
+ X010	○○●○○○○○○○○●○○○○○○●
+ X020	○○○○○○○○○○○○○○○○●○○○
+ X030	○○○○○○○○●●○○○○○○○○○○
+ X040	○○○○○○○○○○○○○○○○○○○○
+ X050	○○●○○○○○○○○●○○○○○○○○
+ X060	○○○○○○○○○○○○○○●○○○○○
+ X070	○○○○●○○○○○○○○○○○○○○



[1] Initiating I/O setting

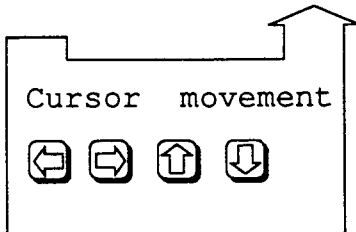
The I/O Set screen appears if the **I/O SET** key is pressed during monitoring. [To end the monitor, observe [5] of 7.3.1.]



[2] I/O Set Screen

```

MATRIX MONITOR
KEY IN = ■
Cursor 0 1 2 3 4 5 6 7 8 9 A B C D E F
+X000  ●○○○○○○○○●○○○○○○○○○
+X010  ○●●○○○○○○○●○○○○○○○●○
+X020  ○○○○○○○○●●○○○○○●○○○
+X030  ○○○○○○○○●●○○○○○○○○○
+X040  ○○○○○○○○○○○○○○○○○○
+X050  ○○●○○○○○○○●○○○○○○○
+X060  ○○○○○○○○○○○○○●○○○○○
+X070  ○○○○●○○○○○○○○○○○○○
    
```



```

4 5 6 7 8 9 A B C D E F  OUTPUT CHANGE
○○○○○○○○○○○○○○○○  *** Y010 T001
○○○○○○○○○○○○○○○○  Y000
○○○○○○○○○○○○○○○○
○○○○○○○○○○○○○○○○
○○○○○○○○○○○○○○○○
○○○○○○○○○○○○○○○○
○○○○○○○○○○○○○○○○
    
```

[2] I/O setting

To adjust the cursor to the position of an element in which an I/O set is required, one can

- ⬆ ... Cursor up
- ⬇ ... Cursor down
- ➡ ... Cursor right

or

- ⬅ ... Cursor left

Once the desired element is high lighted by the cursor, the **SET** key can be used to toggle the ON/OFF status.

**CLS** ... The process goes back to the dynamic monitor immediately.

**CNT** ... The latest monitor status is shown.

\*\*\* Display during simulation mode

- If the PCs is in simulation mode, the changed output is displayed as shown in the figure.

## 7 CONTROL STATUS MONITOR

---

### ■ Control Element Symbol

The relay partitions of a control element correspond to the following display symbols: (This is also true in the time chart monitor.)

Contact A ... ▬

Contact B ... ✕

Output ..... ▬

### ■ I/O setting and Error B9

Error B9 occurs in the I/O set mode when switching the CPU to "SIMU.RUN" from "STOP" or "RUN".

If this error is displayed, the changed output list will not be produced. After this error the outputs are displayed normally.

### ■ Output status change list

In the I/O setting, the following message appears if the output change list overflows the screen:

KEY IN = ■ [CLS/CNT]

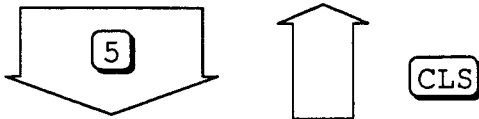
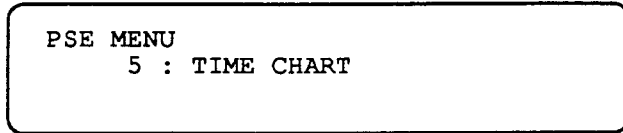
**CNT** ... Returns to monitoring after displaying the remaining output change list.

**CLS** ... Returns to monitoring immediately.

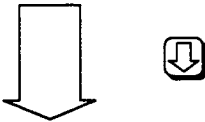
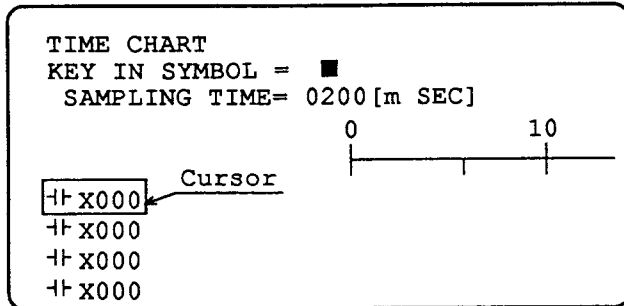
## 7.4 Time Chart Monitor

### 7.4.1 Dynamic monitor

[1] PSE Menu Screen



[2]



[1] Selecting Time Chart

Select "TIME CHART" on the PSE Menu screen.

Press the **5** key.

[2] Changing monitor element setting

① To change a monitor element:

Move the inverted cursor to the position of the monitor element to be changed using the following keys:

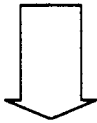
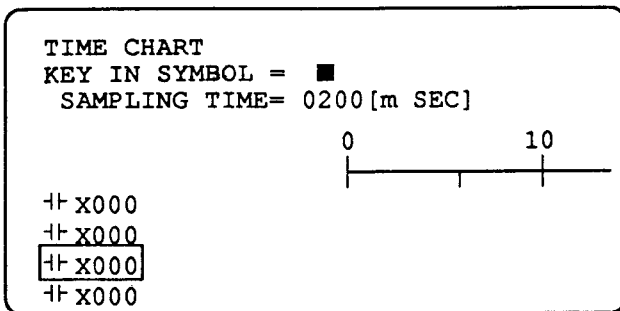
... Inverted cursor up

... Inverted cursor down

② Go to [4] to start the monitor process.

## 7 CONTROL STATUS MONITOR

[3]



Y 0 1 0

[3] Enter the name of an element to be monitored.

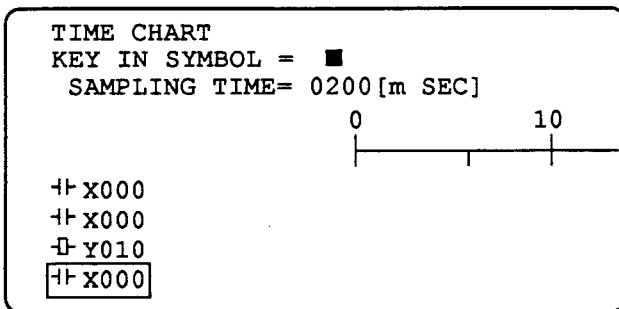
Example:

Change X000, a contact, to Y010, an output.

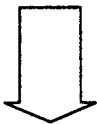
Y 0 1 0

When a setting is complete, the inverted cursor automatically moves down to the next position awaiting another change of the monitor element setting. To [2]

[4]



DYNA.

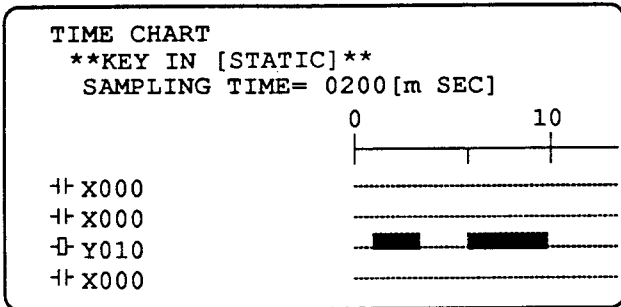


STAT.

[4] Specify start of monitor

Pressing the **DYNA.** key starts monitoring.

[5]



[5] Return to monitor screen

The ON/OFF status of each element, as time elapses, is displayed as shown below.

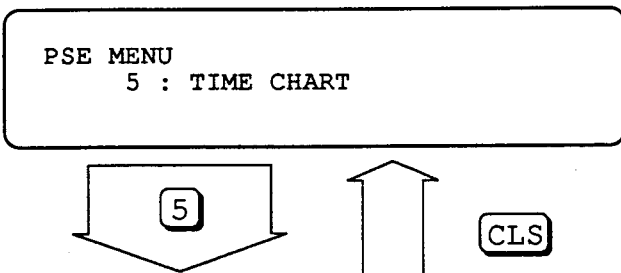
█ ... Element ON  
 — ... Element OFF

**STAT.** ... Stops dynamic monitor, returning to [2].

- If the PCs is in the "STOP" mode, the time chart display will stop updating. The time chart will begin again when the system is changed to the "RUN" or "SIMU.RUN" mode.

### 7.4.2 Sampling time interval setting

[1]



[1] Select time chart

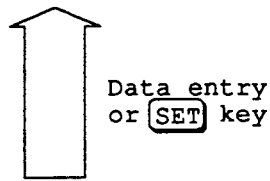
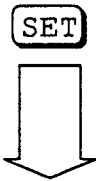
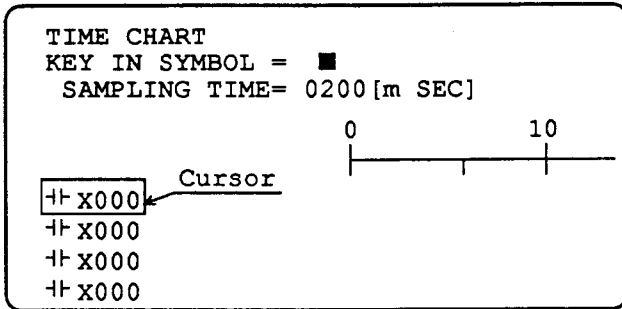
Select "TIME CHART" on the PSE Menu screen.

Press the **5** key.

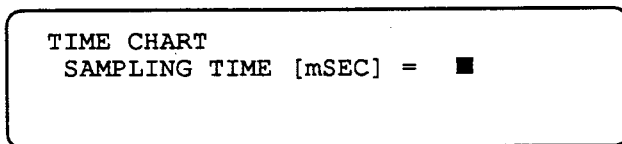
## 7 CONTROL STATUS MONITOR

---

[2]



[3]



[2] Change sampling time interval setting

Press the **SET** key.

[3] Enter time interval

Example:  
Change to 400msec.

Enter **4** **0** **0** **SET** or

**0** **4** **0** **0**

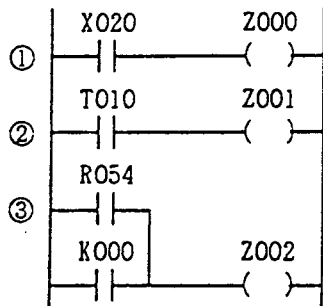
Note: Sampling time interval may be set in the range of 200msec -- 9900msec in units of 100msec.

**CLS** ... Returns to [2].

## 7.5 Logic Tracer

### 7.5.1 Preparation for Logic Tracer Display

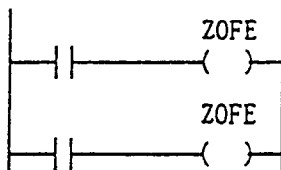
[1] Specifying contact to be traced



Since the logic tracer uses the I/O data trace coil (Z coil), the user must create a circuit consisting of a contact being traced and the Z coil. The trace contact and the Z coil must be connected by AND connection as shown by ① and ② in the figure. If it is connected as in ③, the logic tracer does not display the contact name of Z002 tracing.

- Contact name of trace is not displayed while the PCs is in "RUN" condition.

[2] Specifying initiation condition of tracing



The logic tracer starts and stops by the use of the Z0FE and Z0FF coils. The tracing function is available when the PCs is in the RUN SIMU RUN mode.

Z0FE ... Starts tracing when ON  
Stops tracing when OFF

Z0FF ... Stops tracing when ON

It is the responsibility of the user to make a tracing start/stop circuit using the Z0FE and Z0FF coils.

Stop Condition \ Initiation Condition	Z0FF	
	ON	OFF
Z0FF	x	x
	o	x

o: Tracing, executed  
x: Tracing, not executed

[3] Specifying trace interval

The logic tracer interval is based on units of sequence cycles. The maximum amount of trace data is 120 samples. The sample interval is adjustable to allow the trace data to match a particular process. (For operation, see "7.5.3 Setting trace interval".)

## 7 CONTROL STATUS MONITOR

### 7.5.2 Trace data display

[1] [PSE Menu Screen]

```
PSE MENU
KEY IN MENU No. = ■ [CLS]
```



[2] [Trace Data Display Screen]

```
LOGIC TRACER
KEY IN = ■
TRACE CYCLE = 0040 [SEQ.CYCLE]
```

		60	
		-----	
† X020	Z000		
† T010	Z001		███
	Z002		███
Ⓛ	Ⓜ		

① ... Trace contact name\*

② ... Z coil name

Trace data

```
[ █ ... ON status ]
[ . ... OFF status ]
```

[1] Select Logic Tracer

Select LOGIC TRACER on the PSE Menu screen.

Press the **B** key.

[2] Display trace data

The trace data is shown on a scale of 1 to 120. The largest scale value means the latest data. (The screen can display up to 61 graduations.)

... Moves the display range 1 increment in the direction shown by the arrow.

... Moves the display range 10 increment in the direction shown by the arrow.

... Moves the display range of Z coil one in the direction shown by the arrow.

**CNT** ... Reads the latest trace data into the PCs.

**CLS** ... Ends the logic tracer.

- The trace contact name is not shown if the PCs is in "RUN" status.



## 7.5.3 Trace interval setting

[1] [PSE Menu Screen]

```
PSE MENU
KEY IN MENU No. = ■ [CLS]
```



[2] [Trace Data Display Screen]

```
LOGIC TRACER
KEY IN = ■
TRACE CYCLE = 0040 [SEQ.CYCLE]

        60
        |_____
+X020  Z000  |_____
```



[3] [Trace Interval Set Screen]

```
LOGIC TRACER
KEY IN TRACE CYCLE = ■ [CLS]
```

[1] Select Logic Tracer

Select LOGIC TRACER on the PSE Menu screen.

Press the **B** key.

[2] Specify trace interval setting

Press the **SET** key.

[3] Set trace interval

Example:

Execute trace once for every 5 sequence cycles.

Press the **5** and the **SET** keys.

Return to [2] after pressing the keys.

- The range of the trace interval is 1 ~ 9999 in decimal.

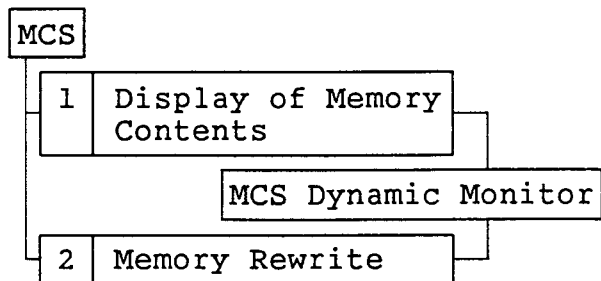
**CLS** ... Ends trace interval setting process.

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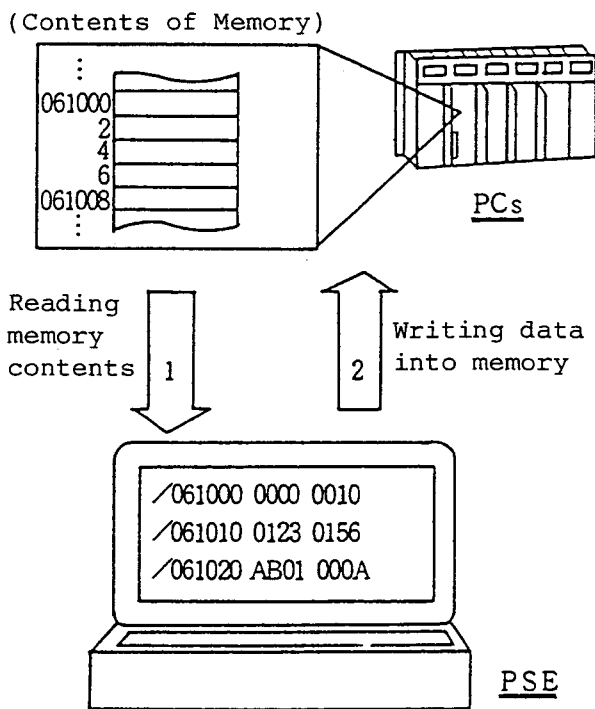
8 MCS

## 8.1 Outline of Function

### 8.1.1 Function of MCS



The MCS reads/writes the contents of the memory of PCs (in remote mode) or PSE (in local mode).



#### (1) Display of Memory Contents (Memory Print)

Displays the contents of the PCs memory on the PSE screen. It is also possible to monitor continuously. The number of words that can be displayed is limited to 128.

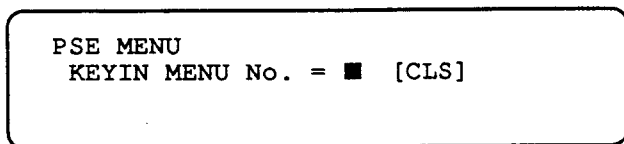
#### (2) Memory Rewrite (Memory Patch)

Rewrites the contents of the PCs memory one word at a time. It is also possible to monitor continuously.

## 8.2 Operation

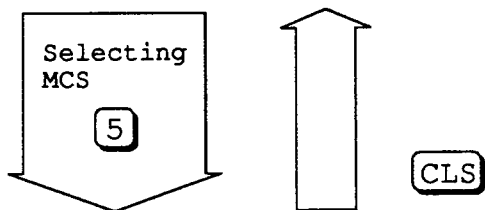
### 8.2.1 MCS menu screen process

[PSE MENU]

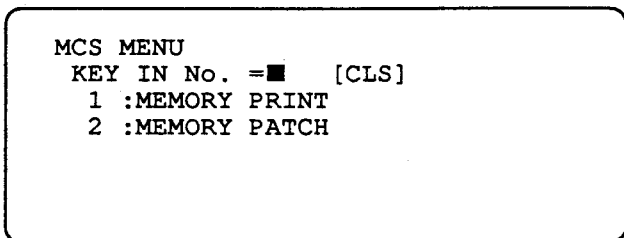


The MCS process is initiated by selecting "MCS" on the PSE Menu screen.

Press the **1** key.



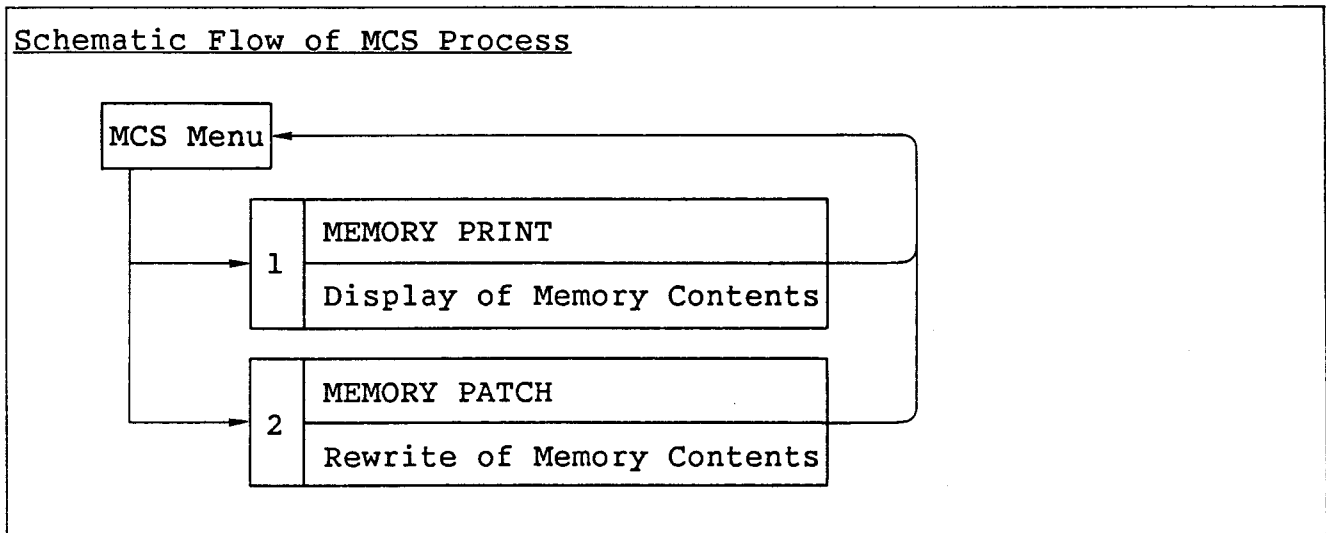
[MCS Menu Screen]



Pressing the number key associated with each process on the MCS Menu screen initiates the associated function.

Pressing the **CLS** key returns control to the PSE Menu screen.

#### Schematic Flow of MCS Process



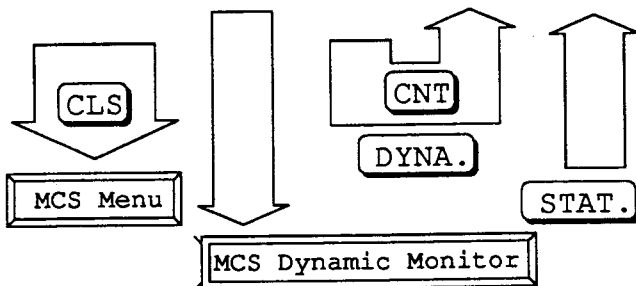


[4]

```

MEMORY PRINT
ADDRESS- / ■ NUMERIC=128
A/061000 0000 0000 0000 2142 --- 1480
061010 C001
061020
⚡ ⚡ ⚡
A/0610F0 0000 2516 0000 2517 --- 2680
Address (Displayed data)

```



[4] Display memory contents

The contents of the memory are shown as can be seen in the figure. When the PSE screen is full, it will scroll up.

- . The contents of another memory location can be seen with the same operations as [2] -- [3].

- CNT** ... Displays the contents of the memory starting at the next address.
- CLS** ... Ends the memory print.
- DYNA.** ... Reads and monitors the contents of the memory continuously for the previously specified address. During this mode, only the **STAT.** key is an accepted keystroke.

8.2.3 Rewriting memory (MEMORY PATCH)

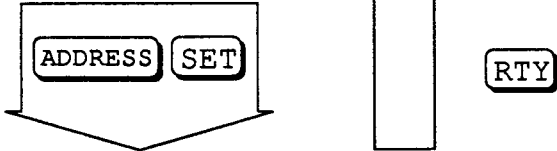
[1] MCS Menu Screen

```
MCS MENU
 2:MEMORY PATCH
```



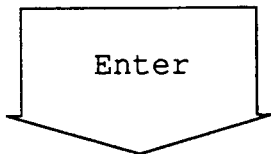
[2]

```
MEMORY PATCH
ADDRESS=/ ■
```



[3]

```
MEMORY PATCH
ADDRESS=/061000
A/061000 H0000 :+0000 ■
(Address)
```



[1] Select "MEMORY PATCH" on the MCS Menu screen.

Press the **2** key.

[2] Enter address ... For example, /61000.

Enter **6 1 0 0 0 SET**  
(Hexadecimal address)

[3] Enter write data

When the address is specified, the current contents of the memory is displayed. Hexadecimal data is preceded by an H. Decimal data is preceded by either a + or -.

(1) To set a memory value in hexadecimal notation:

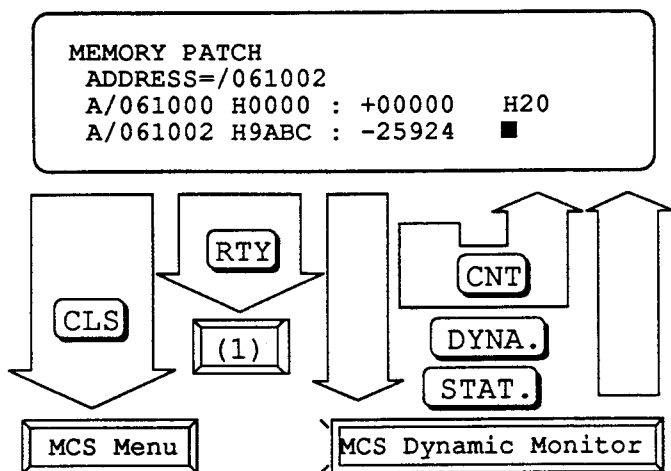
Enter **H 2 0 SET**.  
(Hexadecimal data)  
Must be entered at the leading position when entering hexadecimal data.



- (2) To set a memory value in decimal notation:

Enter **3** **2** **SET** .  
(Decimal data)

[4]



[4] Move address

The process goes to the next address after data has been entered and the **SET** key is pressed.

- CNT** ... The next address is displayed without changing any data.
- RTY** ... Press to enter an address again.
- DYNA.** ... Continues to read and monitor the data of the address currently indicated by the cursor. During this mode only the **STAT.** key is an accepted keystroke.
- CLS** ... Ends the process.

### 8.2.4 Supplementary explanation of operations

Data entry and display can be accomplished by other methods than those previously described in sections 8.2.2 and 8.2.3.

[1] Entering address [ADDRESS=/ ■]

(Operation common to memory display and rewrite)

①       ... The address is entered directly as shown by the examples given in 8.2.2 and 8.2.3. With this method, a short word (one word) of data is displayed at a time.

②       ... Another method of entering the address directly. With this method, a long word (two words) of data are displayed at a time.

③        ... Enter mnemonic code instead of an address. This method can apply to any address with a mnemonic code assigned. In this case, one word is displayed at a time.

④        ... The same as ③ except data is displayed in units of 2 words.

[2] Entering the number of words [NUMERIC-■]  
(Memory contents display operation)

①    ... Displays 10 consecutive words of data in a hexadecimal format.

②    ... Displays 10 consecutive words of data in a decimal format.

- For details of mnemonic code, see "Data Manipulation".
- Hexadecimal Data

	Hexadecimal Number	Decimal Number
Unit of 1 Word	/ 000 ~ / 7FFF	0 - 32767
	/ 800 ~ / FFFF	-32768 ~ -1
Unit of 2 Words	/ 0000 0000 ~ / 7FFFFFFF	0 ~ 2147483647
	/ 8000 0000 ~ / FFFFFFFF	-2147483648 ~ -1

- Entering the number of words

When 129 words or more are entered in units of short words, the number of words is regarded to be 128, or when 65 words or more are entered in units of long words, the number of words is regarded to be 64. When "0" is entered, the same result is given.

## 8.3 Supplementary Description and Cautions to be used

### 8.3.1 Memory rewrite and PCs

When the memory contents are rewritten (in remote), "the PCs must be placed in the STOP state." To rewrite in the protect area, "the PCs must be placed in the STOP state" and "the protect must be set to off."

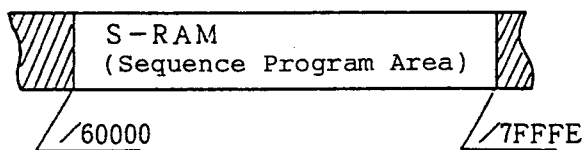
Be careful not to inadvertently rewrite the contents of a memory location. Carelessness can cause program destruction or a PCs down condition.

**CAUTION:**

DO NOT MAKE CHANGES USING MEMORY PATCH IF A MISTAKE COULD RESULT IN INJURY OR DAMAGE DUE TO THE WRONG OUTPUT OPERATING ANYWHERE IN THE I/O.

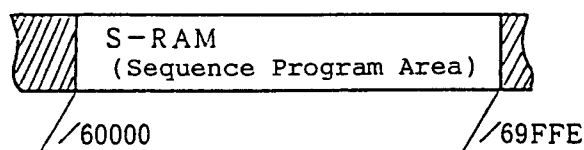
#### (1) Memory map in local processing

[2 a]



The PSE local memory is assigned in the range /60000 -- /7FFFE.

[4 a]



The PSE local memory is assigned in the range /60000 -- /69FFE. The area other than that stated above is treated as the uninstalled area.

#### (2) Others

- ① When entering a numeric value in MCS operation, the **0** key may be omitted as shown in the following example.

Example: Enter the number of words, 1 , in Memory Print.

**0 0 1 SET**                      or                      **1 SET**

- ② If the read address corresponds to the mnemonic code of an data manipulation, the mnemonic code is shown on the left side of the address.

Example:	Mnemonic	Address	Data
	DW000	A/061000	0000

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## 9 PCs EDITION

### 9.1 Outline of Function

The PCs Edition menu function allows adjustment of PCs parameters. The listed subfunctions only need to be adjusted if their standard values are inadequate. The standard values are listed below. If a particular PCs model does not contain a function, error "AB" is displayed.

PCs Edition		2	4
Change Timer(T), One Shot(U), and Counter(C) point quantity	①	○	○
Change sequence cycle	②	○	-
Change remote I/O point quantity	③	○	-
Set CPU/SUB-CPU link "G" transfer area	④	○	○
Set S mode fence	⑤	○	○
Register 10msec timer (T)	⑥	○	○
Register external stop input No.	⑦	○	○
PCs memory all initial	⑧	○	○
Register analog and pulse counters control data	⑨	○	○
Change CPU/SUB-CPU link control data	⑩	○	○
Set rewrite mode during RUN	⑪	○	○

○: Feature available for adjustment  
 -: Feature not available for adjustment



1. Changing timer(T), one-shot(U), and counter(C) points

This selection changes the number of timers(T), one-shot(U), and counters(C) to be processed by the PCs. Decreasing the number of available timers, one-shots, and counters will reduce the O.S. load, thus the sequence cycle time can be shortened.

2. Changing sequence cycle points

This selection changes the sequence cycle time of the PCs. Consideration must be given to the O.S. load when shortening the sequence cycle time:

3. Changing remote I/O points

This selection changes the number of external input/output points processed by the remote I/O. Four choices, 512, 1024, 1536, and 2048 points may be selected. Reducing I/O points will increase the I/O data transfer rate.

4. Setting CPU-CPU/SUBCPU-SUBCPU link transfer G area

Sets the range of G coils that can be transferred by the associated PCs in a CPU-CPU link and in a SUBCPU-SUBCPU link. 1 PCs can transfer up to 1K points (1024 points) G coils.

5. Setting S mode fence

Sets an S mode fence to reserve an area within the sequence program area. The S mode fence prevents the sequence program from extending beyond the fence in order to protect the reserved area.

6. Registering 10msec timer (T)

Normal timers (T) work on a 100msec time base. This function registers T000--T00F (16 points) so that they work on a 10 msec time base.

## 9 PCs EDITION

---

### 7. Registering external stop input No.

This registration is necessary to stop/run the PCs with an external input. The range of numbers registered is the same as that of the external input (X) numbers. After this registration, STOP/RUN of the PCs can be specified through an input terminal.

### 8. PCs memory all initial

Initializes the PCs memory (including the expansion memory). It is advised to save the generated programs, constants, etc. on a floppy disk, since all areas are cleared by this process.

### 9. Registering analog/pulse counter control data

Specifies the address of the I/O unit where the analog/pulse counters are mounted.

### 10. Changing CPU-CPU/SUBCPU-SUBCPU link control data

Specifies how to handle the G area transmission if the transmission of a certain linked CPU has stopped. Either "0 Clear" or "Hold" can be specified. The standard setting is "0 Clear".

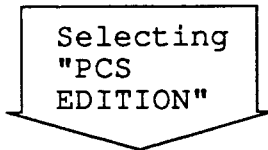
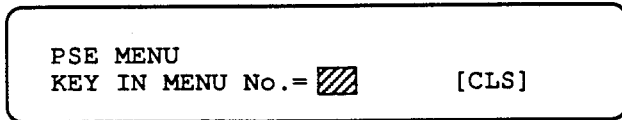
### 11. Selecting rewrite or online programming

Activates/cancels the online change functions.

## 9.2 Operation

The PCs edition function is initiated on the PSE Menu screen.

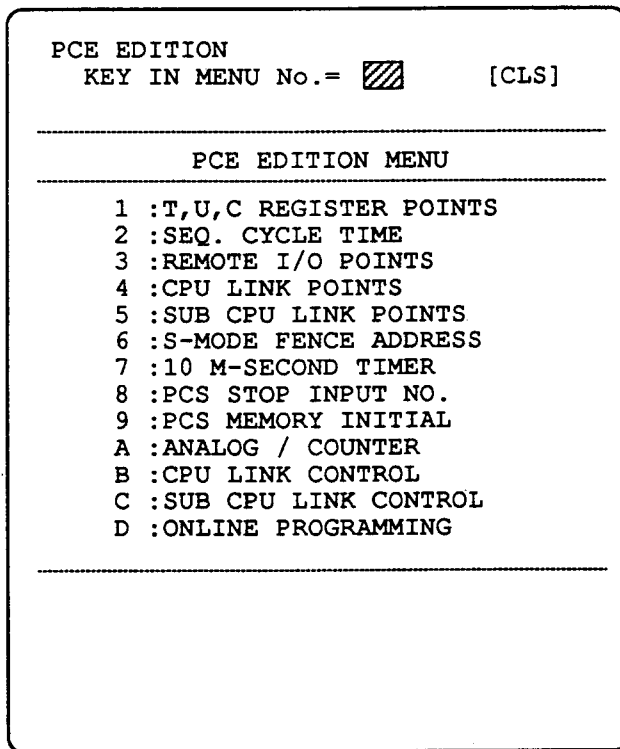
### [STEP 1] PSE Main Screen



Select "PCS EDITION" on the PSE Main screen.

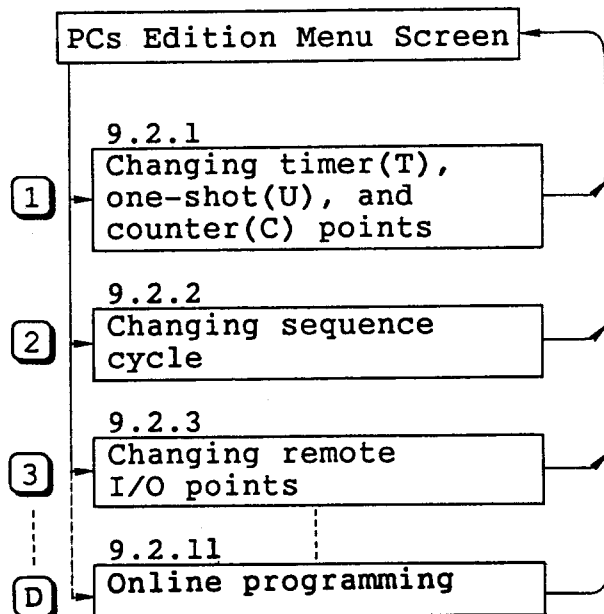
- The PCs must be in stop mode when the PCs edition is started.

### [STEP 2] PCs Edition Menu Screen



The PCs Edit screen is displayed.

[Flow of PCs Edition Operations]



[STEP 3]

\*\*\*\* PLEASE PCS RESET \*\*\*

Resetting  
PCs once


. PCs reset may be required at the end of the PCs edition. In this case, the PSE will wait for a PCs reset. (Control is returned automatically to the PCs Edition Menu screen [STEP 2] when the PCs reset is not necessary.)

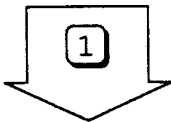
. PCs reset

Reset the switch, if provided on the machine. Remove/apply the power from and to the PCs, if the switch is not provided on the machine.

### 9.2.1 Changing timer(T), one-shot(U), and counter(C) points


[STEP 1]

PCE EDITION  
KEY IN MENU No.= 








. Press the  key on the PCs Edition screen.

[STEP 2]

	KEY IN No.=  [1/2/3/CLS]												
<div style="border: 1px solid black; padding: 5px; width: fit-content;">           Display of PCs Edition Menu         </div>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">1</td> <td style="width: 20%;">: T (TIMER)</td> <td style="width: 15%;">:</td> <td style="width: 60%;">T000-T0FF=256 POINT</td> </tr> <tr> <td>2</td> <td>: U (ONE SHOT)</td> <td>:</td> <td>U000-U03F=064 POINTS</td> </tr> <tr> <td>3</td> <td>: C (COUNTER)</td> <td>:</td> <td>C000-C07F=128 POINTS</td> </tr> </table>	1	: T (TIMER)	:	T000-T0FF=256 POINT	2	: U (ONE SHOT)	:	U000-U03F=064 POINTS	3	: C (COUNTER)	:	C000-C07F=128 POINTS
1	: T (TIMER)	:	T000-T0FF=256 POINT										
2	: U (ONE SHOT)	:	U000-U03F=064 POINTS										
3	: C (COUNTER)	:	C000-C07F=128 POINTS										

. Enter the maximum points of the timer(T), one-shot(U), and counter(C) by 3 digits decimal numbers. Setting is made in units of 16 points, and the remainder is rounded up automatically.

Example: Set T: 512 points.

 ... Selection of T  
   ... T points  
 ... Press to set the points to 0.

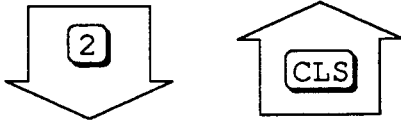
● The maximum enterable points of T, U, and C are:

T: 512 points  
 U: 256 points  
 C: 256 points

### 9.2.2 Changing sequence cycle

[STEP 1]

PCE EDITION  
KEY IN MENU No. = █ [CLS]

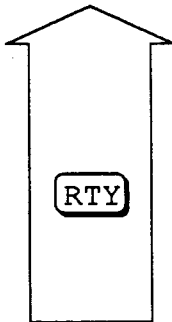


. Press the **2** key on the PCs Edition screen.

[STEP 2]

Display of  
PCs Edition  
Menu

SEQUENCE CYCLE TIME : 030 → \*\*\* [10 - 999]



. Enter a sequence cycle time in decimal notation (010 - 999 msec).

Example: Set to 20 msec.

**0** **2** **0**

● An error occurs if set to less than 10 msec.

[STEP 3]

PCS EDITION  
SET DATA OK? [SET/RTY]

. Confirm the input data.

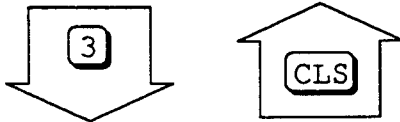
**SET** ... Press when the input data is OK.

**RTY** ... Press to set the data again. To [STEP 1]

## 9.2.3 Changing remote I/O points

[STEP 1]

```
PCS EDITION
KEY IN MENU No.= [ ] [CLS]
```



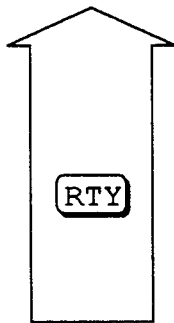
. Press the **3** key on the PCs Edition screen.

[STEP 2]

```
Display of
PCs Edition
Menu
```

```
KEY IN No.= [ ] [1/2/3/CLS]
REMOTO I/O POINT : 2048
```

```
1 : 0512
2 : 1024
3 : 1536
4 : 2048
```



. Set the number of remote I/O points.

- 1** : 512 points
- 2** : 1024 points
- 3** : 1536 points
- 4** : 2048 points

[STEP 3]

```
PCS EDITION
SET DATA OK ? [SET/RTY]
```

. Confirm the input data.

**SET** ... Press when the input data is OK.

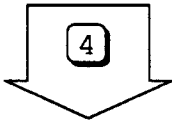
**RTY** ... Press to set the data again. To [STEP 1]

### 9.2.4 Setting CPU-CPU/SUBCPU-SUBCPU link transfer G area

[STEP 1]

```

PCS EDITION
KEY IN MENU No.= [diagonal lines] [CLS]
    
```



. For CPU-CPU Link

Press the **4** key on the PCs Edition screen.

. For SUBCPU-SUBCPU link:

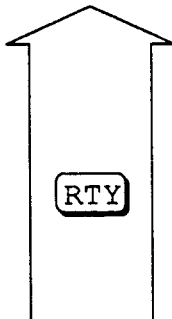
Press the **5** key.

[STEP 2]

```

Display of
PCs Edition
Menu

CPU LINK : RECEIVE ONLY→ G**0
    
```



- . Enter the addresses of the most significant 2 hex digits of the beginning and end of the G area to be transferred.
- . Press the **CNT** key to set the number of transfer words to 0 (receive only). ("RECEIVE ONLY" appears on the screen.)

Example: Transfer G100--G1FF.

Beginning: **1 0**

End: **1 F**



[STEP 3]

PCS EDITION  
SET DATA OK ? [SET/RTY]

. Confirm the input data.


**SET** ... Press when the input data is OK.

**RTY** ... Press to set the data again. To [STEP 1]

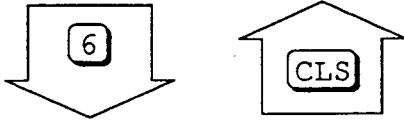
For more details on the CPU-CPU link function, refer to the CPU-CPU Link Manual".

9.2.5 Setting S mode fence

[STEP 1]

PCS EDITION  
KEY IN MENU No.=  [CLS]

. Press the **6** key on the PCs Edition screen.

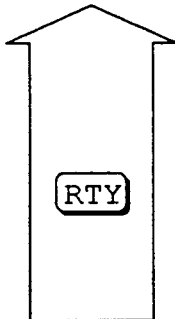


[STEP 2]

Display of  
PCs Edition  
Menu

MIN. ADDR.=/06FFFE  
MAX. ADDR.=/07FFF8

S-MODE FENCE ADDR.:/07FFF8 → /\*\*\*\*\*



. Enter the address of the S mode fence in 6 digits of hexadecimal notation. The input address is effective within the range of MIN.ADDR. to MAX.ADDR. displayed on the screen.

Example: Set the S mode fence to /070000

**0 7 0 0 0 0**

. Confirm the input data.

[STEP 3]

PCS EDITION  
SET DATA OK ? [SET/RTY]

**SET** ... Press when the input data is OK.

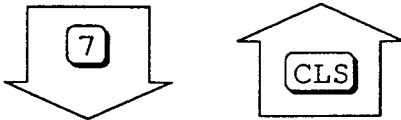
**RTY** ... Press to set the data again. To [STEP 1]

## 9.2.6 Registering 10msec. timer (T)

[STEP 1]

```
PCS EDITION
KEY IN MENU No.=  [CLS]
```

. Press the 7 key on the PCs Edition screen.



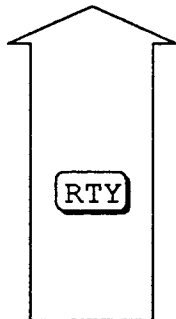
[STEP 2]

```
Display of
PCs Edition
Menu

10 M-SECOND TIMER : NO USE →  0 : NO USE
1 : USE
```

. Specify whether or not to use the 16 points, (T000--T00F) as 10msec timers.

- 0 : To use the first 16 timers (T000--T00F) with the default time base of 100msec. (NO USE)
- 1 : To use the first 16 timers (T000--T00F) with a 10msec time base. (USE)



[STEP 3]

```
PCS EDITION
SET DATA OK ? [SET/RTY]
```

. Confirm the input data.

SET ... Press when the input data is OK.

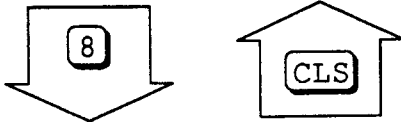
RTY ... Press to set the data again. To [STEP 1]

### 9.2.7 Registering external stop input No.

[STEP 1]

```
PCS EDITION
KEY IN MENU No.= [ ] [CLS]
```

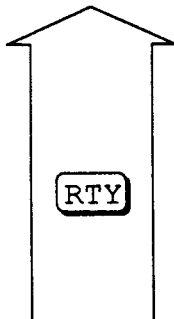
. Press the **[8]** key on the PCs Edition screen.



[STEP 2]

```
Display of
PCs Edition
Menu

PCS STOP INPUT NO. : NO USE → X***
```



. Enter the external stop input No. in 3 digits of hexadecimal notation.

Example: Use X10F as the external stop input.

**[1][0][F]**

● The input range is shown as follows:

2 α series 000-7FF  
 4 α 000-1FF  
 4 α H 000-3FF

If input exceeds this range, "NO USE" appears.

Pressing the **[CNT]** key also means 'unregistered'.

[STEP 3]

```
PCS EDITION
SET DATA OK ? [SET/RTY]
```

. Confirm the input data.

**[SET]** ... Press when the input data is OK.

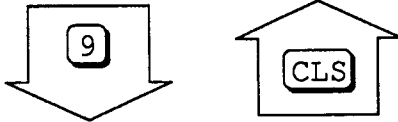
**[RTY]** ... Press to set the data again. To [STEP 1]

9.2.8 PCs memory all initial

[STEP 1]

PCS EDITION  
KEY IN MENU No.= [ ] [CLS]

. Press the **9** key on the PCs Edition screen.



[STEP 2]

Display of  
PCs Edition  
Menu  
PCS MEMORY ALL INITIAL OK? [SET/CLS]

**SET** ... Press to execute 'PCs memory all initial'



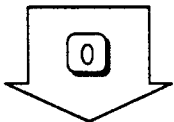
[STEP 3]

REALLY? [YES=0]

. Confirming the execution of 'PCs memory all initial'

**0**: Press to execute.

Pressing any other key will not execute the memory initialize. To [STEP 1]



[STEP 4]

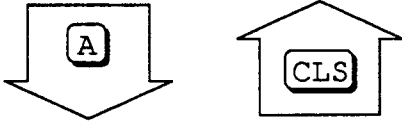
\*\*\*\*\* PLEASE PCS RESET \*\*\*\*\*

. Reset the PCs if a message appears as shown in the figure. Then, go back to [STEP 1] after PCs reset.

### 9.2.9 Registering analog/pulse counter control data

[STEP 1]

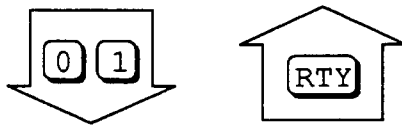
PCS EDITION  
KEY IN MENU No.= [ ] [CLS]



- Press the **A** key on the PCs Edition Menu screen.
- Enter a registration No., module type, and I/O address in this order.

[STEP 2]

KEY IN No.= [ ] [01-24]



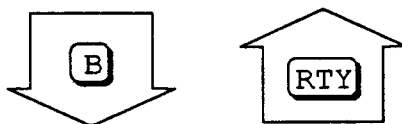
- Enter a registration No. in 2 digits of decimal notation.

Example: Register as No.=01.

**0 1**

[STEP 3]

KEY IN MODULE = [ ] [A-L]	(AI)	(AO)	(PCT)
	A::PAF300	F::PAN300B	K::PTF300
	B::PAF301	G::PAN301B	L::PTF320
	C::PAF309	H::PAN309	
	D::PAF320	I::PAN320B	
	E::PAF329	J::PAN329	





- Select the type of module on the screen. (A L)

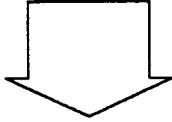
Example: In case of PAR301 of AI:

**B**

- To cancel a registration, press the **DEL** Key.

## [STEP 4]

KEY IN X/Y ADDR=   0-\*\*F



NO.:	MODULE	X(IN)	Y(OUT)	EW(DATA)
01:	PAF301	000-00F	---	400-430
02:				
03:				
04:				

- Enter the most significant 2 digits of the I/O address in hexadecimal notation.

Example: Mount PAF301 to  
X000--X00F.

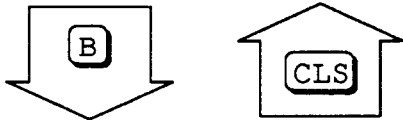
0 0

- Upon completion of the entering of the I/O address, the data entered is displayed as shown in the figure, and control is returned to [STEP 2].

9.2.10 Changing CPU-CPU/SUBCPU-SUBCPU link control data

[STEP 1]

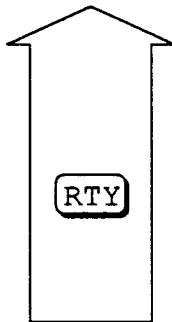
PCS EDITION  
KEY IN MENU No.= [CLS] [CLS]



- Press the **B** key on the PCs Edition Menu screen. (Press the **C** key for SUBCPU-SUBCPU link.)

[STEP 2]

Display of PCs Edition Menu  
DOWN PCS G CLR/HOLD = CLR → [CLS] 0 : CLR 1 : HOLD



- Specify whether to clear with 0 or retain the area if a PCs has stopped the transfer.
  - 0** : To clear with 0
  - 1** : To retain

[STEP 3]

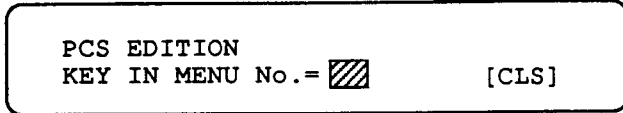
PCS EDITION  
SET DATA OK ? [SET/RTY]

- Confirm the input data.
  - SET** ... Press if the input data is OK.
  - RTY** ... Press to set the data again.

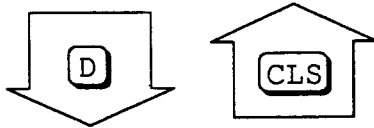


### 9.2.11 Setting in-run rewrite mode

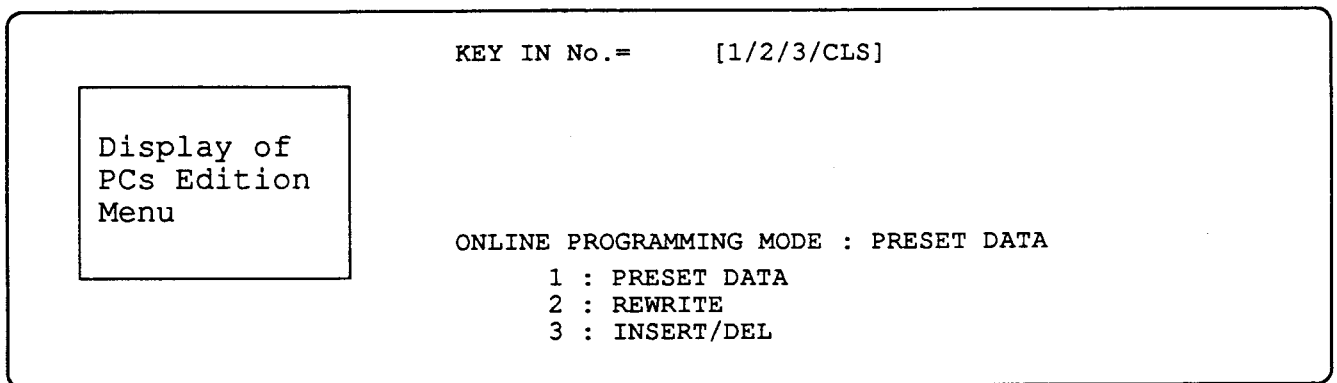
[STEP 1]



. Press the **D** key on the PCs Edition Menu screen.

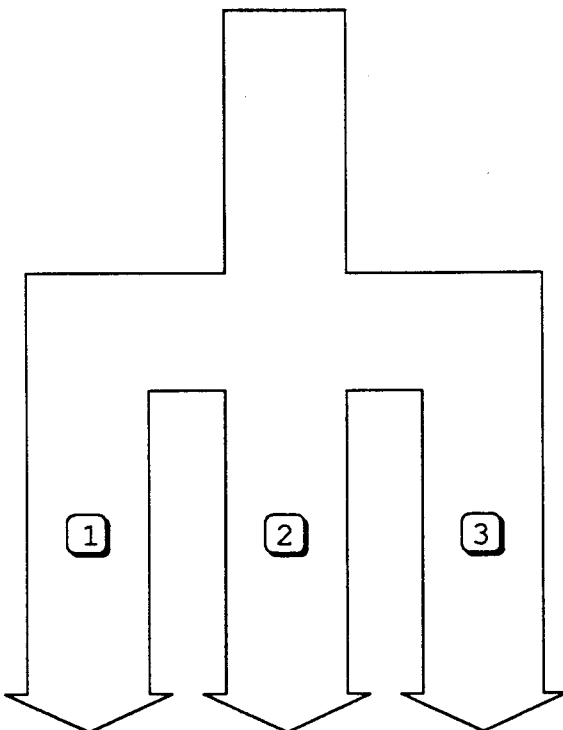


[STEP 2]



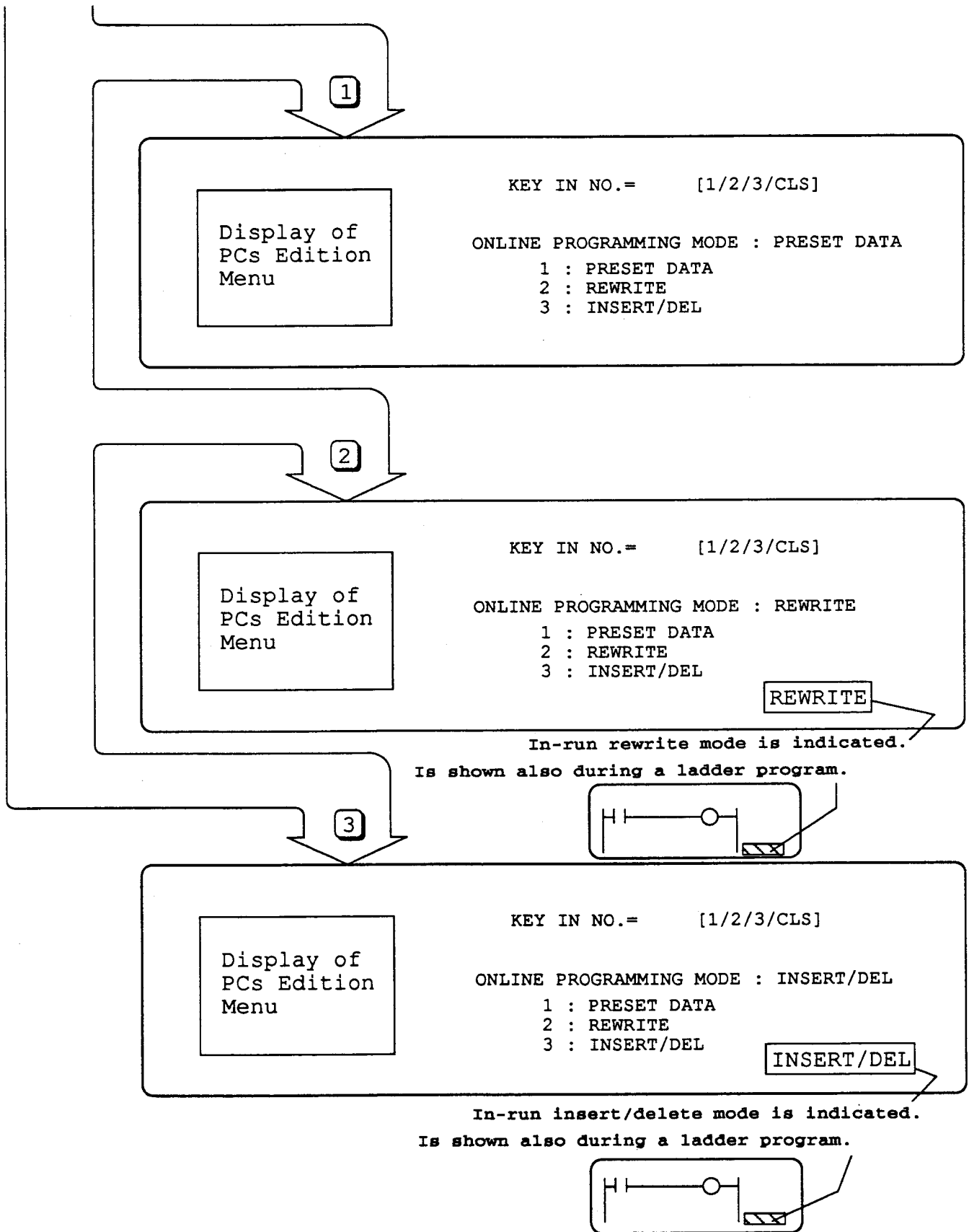
. Specify the on line (IN-RUN) rewrite mode.

- ①: Normal mode (Preset data change mode)
- ②: In-run rewrite mode (Replacement of contact/coil)
- ③: In-run insert/delete mode Adding/deleting contacts, coils, and data manipulations



**Note:**

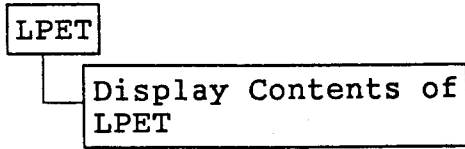
When using a system F/D for Ver.5.0 Rev.0.0 or before:  
 If a program change is made during ③ In-run insert/delete mode, the ladder program stops for about 1 second. The CPU RUN/STOP contact changes RUN STOP RUN for a moment.



**10 LPET**

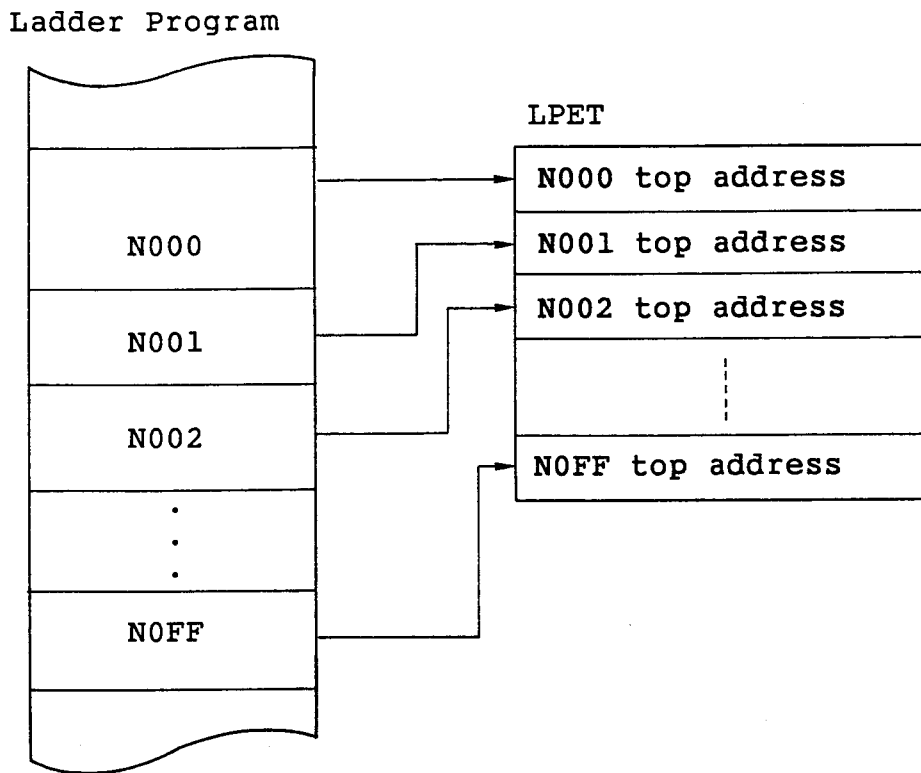
## 10.1 Outline of Functions

### 10.1.1 Outline of LPET process



- Selecting LPET displays the registered contents of the LPET (Ladder Program Edition Table).
- The LPET is automatically updated by the PSE when a ladder program is created.

### 10.1.2 Ladder program and LPET



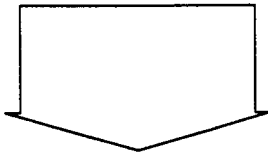
## 10.2 Operation

### 10.2.1 Display of LPET contents (LPET MAP)

[1] [PSE Menu Screen]

```

PSE MENU
KEY IN MENU NO. = [CLS]
  
```



[2]

```

LPET MAP
KEY IN N NO. = ■ [CLS]

NNO.   ADDRESS   USED
000    /063800   02572
001    /066030   -----
002    /066034   -----
⋮
①      ②          ③
  
```

- ① N coil No.
- ② Nest top address
- ③ Capacity of nesting coil (Decimal notation)

[1] The LPET process is initiated by selecting "LPET" on the PSE Menu screen.

[2] Specify the leading N No. to be displayed.

**0 0 0** ... Sets N No.=000.

(N No. setting)

**CNT** ... Displays the following N Nos.

**CLS** ... Ends the LPET MAP process.

. Repeat the operation in step [2] to redisplay from other N No.

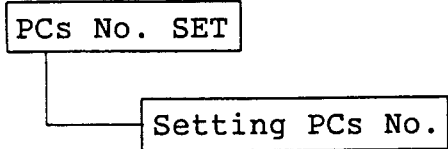
- The nesting capacity does not contain the SEND and EOP instructions. 'Unused' Nests are denoted by "----"
- If COMENT DISPLY is shown in display mode, the comment of each N No. is displayed in line with 'USED'.

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**11    SETTING PCs NO.**

### 11.1 Outline of Function

#### 11.1.1 Outline of PCs No. setting process



- PCs No. can be set (changed).
- The PCs No. is automatically set to 0000 at start-up.
- The PCs No. is a 4 digit decimal number from 0000 to 9998 that is assigned as a unique address to the PCs. Assigning a unique PCs number to each programmable controller helps to prevent loading the PCs with the wrong control program.

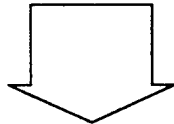


## 11.2 Operations

### 11.2.1 Setting PCs No.

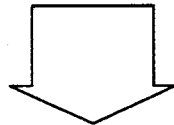
[1] [PSE Menu Screen]

PSE MENU  
KEY IN MENU NO. = ■ [CLS]



[2]

PLEASE KEY IN PCs NO.= ■



[3]

0015 OK? ■ [SET/RTY]

[1] Select "PCs No. SET" on the PSE Menu screen.

[2] Enter a new PCs No..

Example: For example,  
enter the PCs  
number  
No.=0115.

0 1 1 5

[3] Confirm that the PCs No. is correct on the screen.

**SET** ... Press if the set PCs No. is OK.

**RTY** ... Press to set the PCs No. again. To [2]

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# **12 COMMENT INPUT/OUTPUT**

## 12 COMMENT INPUT/OUTPUT

### 12.1 Comment Input/Output Function

Two functions are provided for comment input/output as shown below.

8	COMMENT READ & WRITE
	Comment Generation

Generates a comment in the comment file stored on floppy disk.

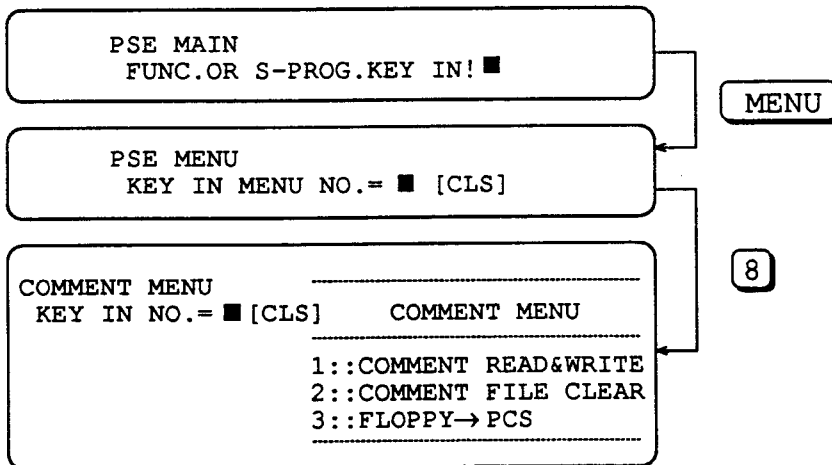
9	COMMENT DISPLAY
	Comment Status Management

Selects the output device and sets the display mode, and specifies the comment file name.

### 12.2 Comment Display/Generation (COMMENT (R&W) )

#### 12.2.1 Outline

This function generates and displays a comment. Start up the function by following the procedure shown below.



## 12.2.2 Comment generation installing operation

## (1) Generating a new comment file.

①

```

COMMENT MENU
KEY IN NO.= ■ [CLS]
-----
COMMENT MENU
-----
1::COMMENT READ&WRITE
2::COMMENT FILE CLEAR
3::FLOPPY → PCS
-----

```

①

Press the **1** key.

②

```

COMMENT R&W
COMMENT OK? ■ [NO./SET/CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::COMMENT FILE NAME      .CMT
-----

```

②

When registering a comment file name as PRT.CMT, for example, insert a formatted floppy disk in the drive and press the **1** key.

③

```

COMMENT R&W
F-NAME= ■
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::COMMENT FILE NAME      .CMT
-----

```

③

Enter comment file name.

**P** **R** **T** **SET**

④

```

COMMENT R&W
F-NAME=PRT .CMT ■ [SET/CLS/RTY]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::COMMENT FILE NAME      .CMT
-----

```

④

Confirm the file name.

**SET** ... When OK → **5**

**RTY** ... → **3**

## 12 COMMENT INPUT/OUTPUT

⑤

```

COMMENT R&W

-----
COMMENT FILE HEADER
-----
FILE NAME:PRT                .CMT
PCS NO.  :0000
PCS TYPE :00F2
Y-M-D-H  ■ - - - -         ← (a)
COMMENT  :                  ← (b)
    
```

⑤ Enter generation date of the comment file and file comment

a) 8 6 0 5  
2 3 1 0

b) C O M M E N  
T  
S A M P L E  
SET

⑥

```

COMMENT R&W
HEADER CHANGE OK? ■ [SET/CLS/RTY]

-----
COMMENT STATUS
-----
FILE NAME:PRT                .CMT
PCS NO.  :0000
PCS TYPE :00F2
Y-M-D-H  :86-05-23-10
COMMENT  :COMMENT SAMPLE
    
```

⑥ Confirm contents of file header

SET ... Press when OK → ⑦  
The screen of ⑦ takes several minutes to appear when a new file name is created.

RTY ... Press to change the contents of the header.

⑦

```

COMMENT R&W
COMMENT OK? ■ [NO./SET/CLS]

-----
COMMENT STATUS
-----
1::COMMENT FILE NAME...PRT .CNT
    
```

⑦ SET ... Press when the file registration is OK. The screen advances to the COMMENT READ&WRITE screen. When specifying a function symbol, the comment file data can be displayed or generated.

- Only "COMMENT READ&WRITE" can generate a comment file.
- Use the floppy disk input/output process to delete a comment file.

(2) Generating, adding or modifying comments in the generated comment file.

①

```

COMMENT MENU
KEY IN NO.= ■ [CLS]
-----
COMMENT MENU
-----
1::COMMENT READ&WRITE
2::COMMENT FILE CLEAR
3::FLOPPY → PCS
    
```

① Press the **[1]** key.

②

```

COMMENT R&W
COMMENT OK= ■ [NO./SET/CLS]
-----
COMMENT STATUS
-----
1::DRIVE SELECTION...FLOPPY
2::COMMENT FILE NAME... .CMT
    
```

② Specify the file name of the comment file to be modified.

Example: "PRT.CMT"

Press the **[1]** key.

③

```

COMMENT R&W
F-NAME= ■
-----
COMMENT STATUS
-----
1::DRIVE SELECTION...FLOPPY
2::COMMENT FILE NAME... .CMT
    
```

③ Enter comment file name.

**[P]** **[R]** **[T]** **[SET]**

④

```

COMMENT R&W
F-NAME=PRT .CMT ■ [SET/CLS/RTY]
-----
COMMENT STATUS
-----
1::DRIVE SELECTION...FLOPPY
2::COMMENT FILE NAME... .CMT
    
```

④ Confirm file name.

**[SET]** ... Press when setting is OK. → ⑤

**[RTY]** ... → ③

## 12 COMMENT INPUT/OUTPUT

---

⑤

```
COMMENT R&W
HEADER OK? ■ [SET/CLS/RTY]
-----
COMMENT STATUS
-----
FILE NAME:PRT                .CMT
PCS NO.   :0000
PCS TYPE  :00F2
Y-M-D-H   :85-10-18-21
COMMENT   :SAMPLE COMMENT
-----
```

⑤ Confirm contents of comment file header

**SET** ... Press when OK.  
→ ⑥

**RTY** ... Press to change the contents of the header.

⑥

```
COMMENT R&W
COMMENT OK? ■ [NO./SET/CLS]
-----
COMMENT STATUS
-----
1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME..PRT   .CMT
-----
```

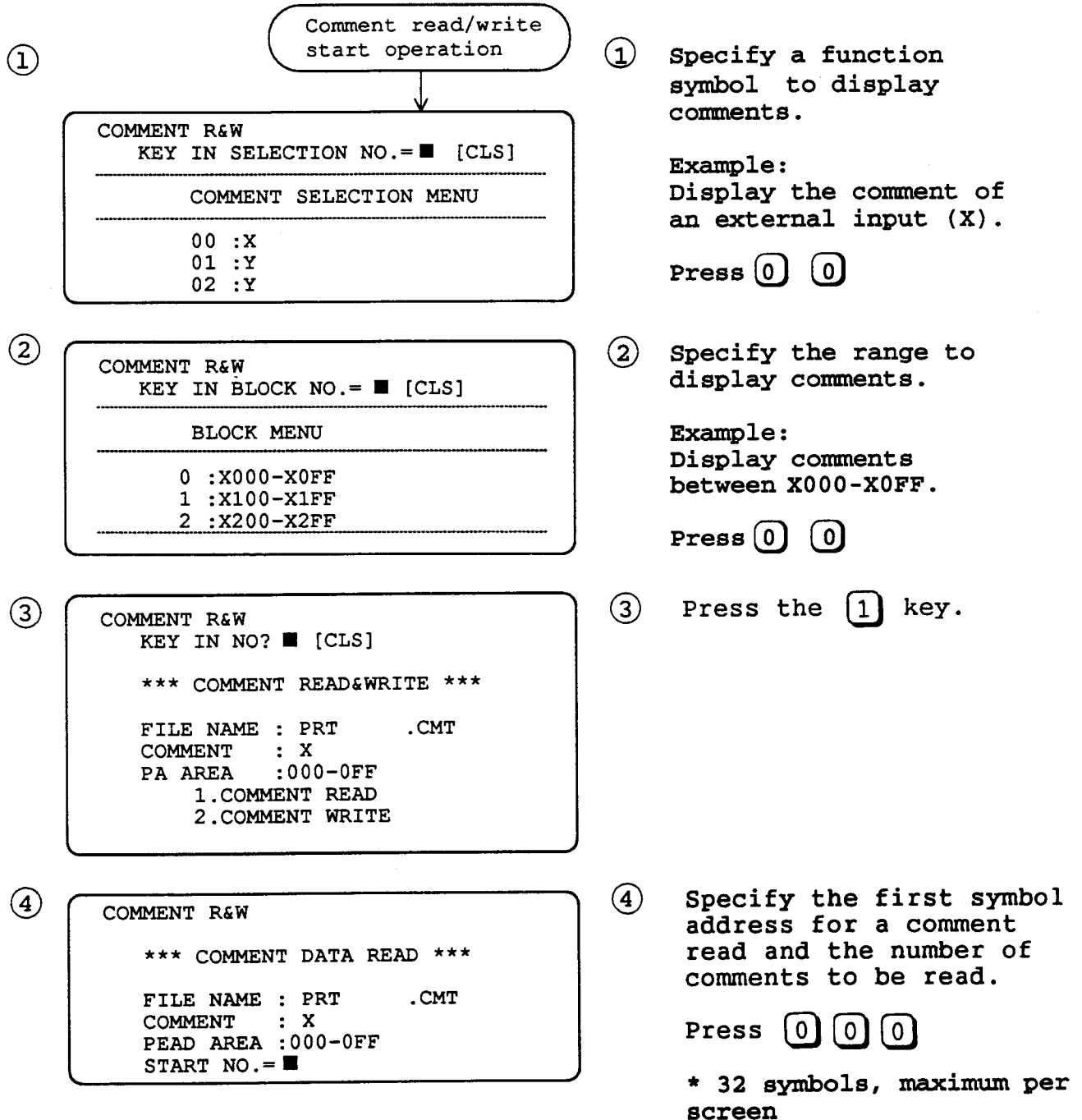
⑥ Confirm registered comment file

**SET** . . . Press when the file registration is OK. The screen advances to the COMMENT READ&WRITE screen. When specifying a function symbol, the comment file data can be displayed or generated.



## 12.2.3 Comment file data display (COMMENT READ)

Displaying comments in the generated comment file.



## 12 COMMENT INPUT/OUTPUT

---

⑤

COMMENT R&W
*** COMMENT DATA READ ***
FILE NAME : PRT .CMT
COMMENT : X
READ AREA : 000-OFF
START NO.=■
X000= X008= X010= X018=
X001= X009= X011= X019=

⑤  
**CNT** ... Displays 32 symbols successively starting with X020.

To redisplay from a different symbol, operate the same way as ④ .

12.2.4 Comment file data generation (COMMENT WRITE)

Comment read/write  
start operation

①

```
COMMENT R&W
KEY IN SELECTION NO.=
-----
COMMENT SELECTION MENU
-----
00 :X
01 :Y
```

①

Specify the function symbol to generate comments.

**Example:**  
Generate the comment of an external input (X).

Press **0 0**

②

```
COMMENT R&W
KEY IN BLOCK NO.= [CLS]
-----
BLOCK MENU
-----
0 :000-0FF
1 :100-1FF
2 :200-2FF
3 :300-3FF
4 :400-4FF
```

②

Specify the range to generate comments.

**Example:**  
Generate comments between X000-X0FF.

Press the **0** Key.

③

```
COMMENT R&W
KEY IN NO? ■ [CLS]

*** COMMENT READ&WRITE ***

FILE NAME : PRT      .CMT
COMMENT   : X
PA AREA   :000-0FF
          1.COMMENT READ
          2.COMMENT WRITE
```

③

Press the **2** key.

④

```
COMMENT R&W

*** COMMENT DATA WRITE ***

FILE NAME : PRT      .CMT
COMMENT   :X
WRITE AREA: 000-0FF
START NO.= ■
```

④

Specify the symbol address to generate comments.

**Example:**  
Generate a comment for X010.

Press **0 1 0**

## 12 COMMENT INPUT/OUTPUT

---

⑤ COMMENT R&W  
\*\*\* COMMENT DATA WRITE \*\*\*  
FILE NAME : PRT .CMT  
COMMENT : X  
WRITE AREA :000-OFF  
START NO.=■  
X010=@ ④

Comment Data Input

⑤ The current contents of X010 is displayed on the screen.

a) .. Display comment area

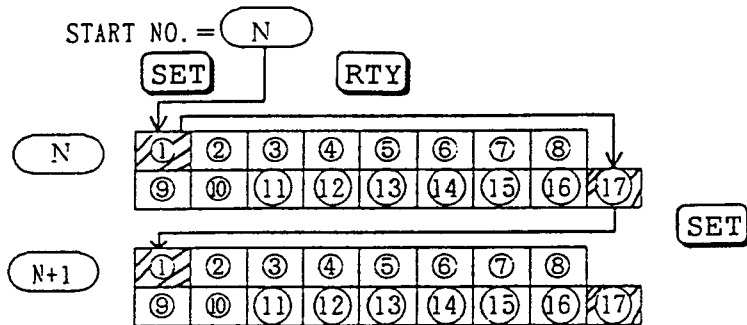
b) .. Input comment area

**CNT** ... Press to display X011.  
To display a different symbol, use STEP ④ again.

**SET** ... The comment in area ④ is entered.





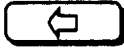
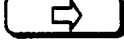
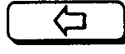

## 12.2.5 Outline of comment data input

The basic flow of the comment data input is shown in the following:

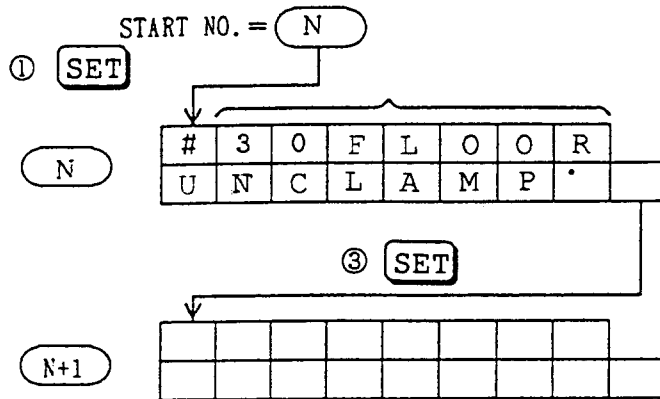


- . The comment input normally proceeds from ① → ⑰ , rewriting the previous data.
- . Pressing the **RTY** key at the position ① of **N+1** causes the comment of the symbol at **N** to be copied to the **N+1** area.
- . Once in the comment data input mode, the comments of the successive symbols can be entered one after the other.

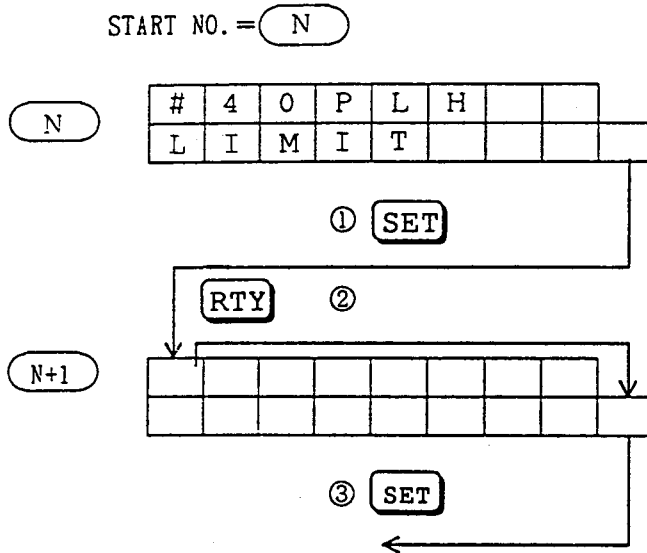
## 12 COMMENT INPUT/OUTPUT

Input Position Input key	Comment Field		
	①	② - ⑯	⑰
<b>SET</b>	Cursor proceeds to ⑰ filling the remaining comment area with spaces	←	Cursor moves to the comment input of the next symbol.
<b>CLS</b>	Ends the comment input process.	←	←
<b>RTY</b>	Copies the comment of the preceding symbol.	Backs the cursor one position, replacing the character in the cursor position with a space character.	←
<b>CNT</b>	Moves the cursor one position, replacing the character in the cursor position with a space character.	←	
<b>LINE INS.</b>	Inserts a space to the left of the cursor position.	←	
<b>DEL</b>	Deletes the character in the cursor position.	←	
   	   Moves the cursor in the direction of the arrow.	Moves the cursor in the direction of the arrow.  ←	   Moves the cursor in the direction of the arrow.

Example 1: Typical comment generation



Example 2: Copying the contents of the preceding symbol



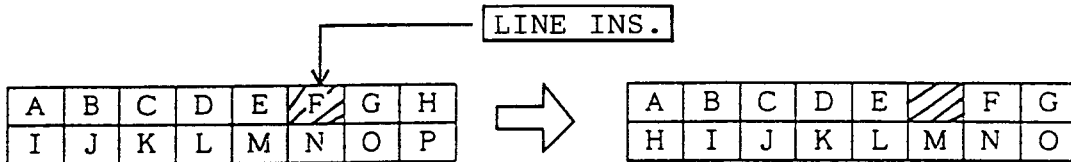
## 12 COMMENT INPUT/OUTPUT

---

### Example 3: Insertion

Pressing the **LINE INS.** key during comment input inserts a space character in the cursor position.

- ① In case of one character being inserted:

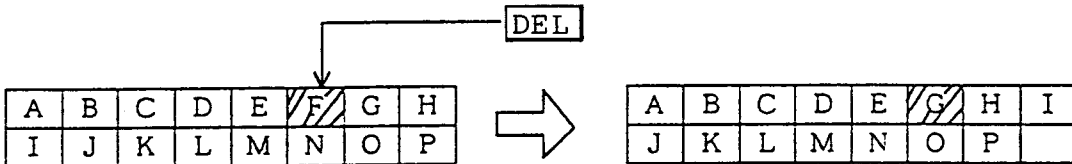


- The character P is erased.

### Example 4: Deletion

Pressing the **DEL** key during comment input deletes a character in the cursor position.

- ① Example of one character being deleted:



- A space is inserted to the right of P.



## 12.3 Comment Status Management

### 12.3.1 Outline

This function selects the output device and sets the display mode, and specifies the comment file name. Start up the function as shown below.

```
F/DISK COMMENT
COMMENT OK? ■ [NO./SET/CLS]
```

```
-----
COMMENT STATUS
-----
```

```
1::DRIVE SELECTION.....FLOPPY
2::COMMENT FILE NAME..... .CMT
```

```
COMMENT DISPLAY
-----
```

```
COMMENT OK? ■ [NO./CLS]
```

```
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME..... .CMT
```

This screen appears in the following cases:


- ① Comment creation
- ② Comment file data clear
- ③ Comment loading

This screen appears in:

- ④ Specification of comment display status

## 12 COMMENT INPUT/OUTPUT

### 12.3.2 Comment status management items

Function		Description
Device Selection (DEVICE SELECTION)	NO SELECTION	Comment data is not output.
	FLOPPY	A comment is output from a floppy disk.
	RAM DISK	A comment is output from the RAM disk.
	PCS	A comment is output out of the resident comments in the PCs memory.
Display Mode Select (DISPLAY MODE)	MANUAL	An output coil comment is displayed by pressing the <b>COM.OUT</b>  <b>Y 1 0 0</b> keys.
	PARTIAL COIL	A comment is automatically displayed for a nest or error coil.
	ALL COIL	Comments are displayed for all output coils automatically.
Comment File Name Set (COMMENT FILE NAME)	The file name must be alphanumeric with 8 characters, beginning with an English letter.	A file name for the comment input/output is specified.

- With a function affected by 'Device Select' (LADDER CIRCUIT LIST, etc.), the contents of Comment File Name Set become invalid, if the "PCS" is specified.
- "PCS" of Device Select may be chosen only when PSE is connected to PCs.

12.3.3 Comment status management operation

The following explanation uses "Specification of comment display status" (COMMENT DISPLAY) as an example. The operation necessary for each management item is the same operation for the comment input/output process functions (3 types).

- (1) Device Select  
(DEVICE SELECTION)

①

```

COMMENT DISPLAY
COMMENT OK? ■ [NO./CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME..... .CMT
    
```

Press the **1** key.

②

```

COMMENT DISPLAY
KEY IN NO.= ■ [CLS]
-----
SELECTION MENU
-----
0::NO SELECTION
1::FLOPPY
2::RAM DISK
3::PCS
    
```

Example:

Output a comment from a floppy disk.

Press the **1** key.

③

```

COMMENT DISPLAY
COMMENT OK? ■ [NO./CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME..... .CMT
    
```

## 12 COMMENT INPUT/OUTPUT

---

### (2) Display Mode Select (DISPLAY MODE)

①

```
COMMENT DISPLAY
COMMENT OK? ■ [NO./CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME..... .CMT
```

Press the **2** key.

②

```
COMMENT DISPLAY
KEY IN NO.= ■ [CLS]
-----
SELECTION MENU
-----
0::MANUAL
1::PARTIAL COIL
2::ALL COIL
```

Example:

Display the comments to all coils.

Press the **2** key.

③

```
COMMENT DISPLAY
COMMENT OK? ■ [NO./CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....ALL COIL
3::COMMENT FILE NAME..... .CMT
```

(3) Comment File Name Set and Header Change (COMMENT FILE NAME)

①

```

COMMENT DISPLAY
COMMENT OK? ■ [NO./CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME..... .CMT
    
```

① Press the **3** key.

②

```

COMMENT DISPLAY
F-NAME= ■
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME..... .CMT
    
```

② Enter file name  
Example: "PRT.CMT"

**P R T SET**

③

```

COMMENT DISPLAY
F-NAME=PRT .CMT[SET/CLS/RTY]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME..... .CMT
    
```

③ Confirm file name

**SET** ... Press when the setting is OK.  
To → **4**

**RTY** ... To → **2**

④

```

COMMENT DISPLAY
HEADER OK? ■ [SET/CLS/RTY]
-----
COMMENT STATUS
-----
FILE NAME:PRT .CMT
PCS NO. :0000
PCS TYPE :00F2
Y-M-D-H :85-10-18-21
COMMENT :SAMPLE COMMENT
    
```

④ Confirm contents of file header

**SET** ... Press when the setting is OK.  
To → **7**

**RTY** ... Press to change the contents of the header. To → **5**

## 12 COMMENT INPUT/OUTPUT

⑤

```

COMMENT DISPLAY
-----
          COMMENT FILE HEADER
-----
FILE NAME:PRT                .CMT
PCS NO.   :■                  →
PCS TYPE  :00F2
Y-M-D-H   :- - -             ←
COMMENT   :                   ←
-----
    
```

⑤ Enter PCS NO., data of generation, and comment

Example:

a) 1 2 3 4 SET  
 b) 8 6 0 5 2 3  
 1 0  
 c) C O M M E N  
 T  
 F I L E SET

⑥

```

COMMENT DISPLAY
HEADER CHANGE OK? ■ [SET/CLS/RTY]
-----
          COMMENT STATUS
-----
FILE NAME:PRT                .CMT
PCS NO.   :1234
PCS TYPE  :00F2
Y-M-D-H   :86-05-23-10
COMMENT   :COMMENT FILE
-----
    
```

⑥ Confirm file name

SET ... Press when the setting is OK.  
 To → ⑦

RTY ... To → ⑤

⑦

```

COMMENT DISPLAY
COMMENT OK? ■ [NO./CLS]
-----
          COMMENT STATUS
-----
1::DEVICE SELECTION.....FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME.....PRT .CMT
-----
    
```

## 12.4 Comment File Clear (COMMENT FILE CLEAR)

### 12.4.1 Deleting all data in comment file

- ①
- ```

COMMENT MENU
KEY IN NO.= ■ [CLS]
-----
COMMENT MENU
-----
1::COMMENT READ&WRITE
2::COMMENT FILE CLEAR
3::FLOPPY → PCS
-----

```
- ① Press the **2** key.
- ②
- ```

COMMENT CLEAR
KEY IN NO.= ■ [CLS]
-----
COMMENT FILE CLEAR MENU
-----
1::ALL CLEAR
2::PARTIAL CLEAR
-----

```
- ② Press the **1** key.
- ③
- ```

ALL CLEAR
COMMENT OK? ■ [NO./SET/CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION...FLOPPY
2::COMMENT FILE NAME.. .CMT
-----

```
- ③ Specify the comment file intended for comment data deletion.
- Example:  
Delete "PRT.CMT" file.
- 1** **P** **R** **T** **SET**
- ④
- ```

COMMENT R&W
COMMENT OK? [NO./SET/CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION...FLOPPY
2::COMMENT FILE NAME..PRT .CMT
-----

```
- ④ Example:  
"PRT.CMT" file has been registered.
- SET** ... Press when confirmed OK. → **5**
- ⑤
- ```

ALL CLEAR
FILE CLEAR OK? ■ [DEL/CLS]
-----
COMMENT FILE HEADER
-----
FILE NAME:PRT .CMT
PCS NO. :0000
PCS TYPE :00F2
Y-M-D-H :85-10-18-21
COMMENT :SAMPLE COMMENT
-----

```
- ⑤ Confirm the contents of the comment file header being deleted
- DEL** ... Press when OK.
- Data deletion starts.

## 12 COMMENT INPUT/OUTPUT

---

### 12.4.2 Deleting partial data in comment file

①

```
COMMENT MENU
KEY IN NO.= ■ [CLS]
-----
COMMENT MENU
-----
1::COMMENT READ&WRITE
2::COMMENT FILE CLEAR
3::FLOPPY → PCS
```

①

Press the **2** key.

②

```
COMMENT CLEAR
KEY IN NO.= ■ [CLS]
-----
COMMENT FILE CLEAR MENU
-----
1::ALL CLEAR
2::PARTIAL CLEAR
```

②

Press the **2** key.

③

```
PARTIAL CLEAR
COMMENT OK? ■ [NO./SET/CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION...FLOPPY
2::COMMENT FILE NAME.. .CMT
```

③

Specify the comment file intended for comment data deletion

Example:  
The intended file is "PRT.CMT".

**1 P R T SET**

④

```
PARTIAL CLEAR
-----
COMMENT STATUS
-----
1::DEVICE SELECTION...FLOPPY
2::COMMENT FILE NAME..PRT .CMT
```

④

Example:  
"PRT.CMT" file has been registered.

Press the **SET** key.





## 12 COMMENT INPUT/OUTPUT

### 12.5 Comment Loading (FLOPPY → PCs)

This function is used to output a comment out of the resident comments in the PCs memory.

①

```
COMMENT
KEY IN NO.= ■ [CLS]
-----
COMMENT MENU
-----
1::COMMENT READ&WRITE
2::COMMENT FILE CLEAR
3::FLOPPY → PCS
-----
```

①

Press the **3** key.

. Step ② is taken when the comment management table has not been created yet. Use Step ④, when the table exists.

②

```
FLOPPY → PCS
COMMENT CONTROL TABLE=/ ■ →/*****
```

②

Creating the table to manage the PCs memory resident comments. (This table requires 256 words.)

Example:  
Create at expansion memory address,/200000.

**2 0 0 0 0 0 SET**

. To delete the comment management table, press the **DEL** key.

③

```
TABLE ADDRESS OK? ■ [SET/CLS/RTY]
COMMENT CONTROL TABLE=/200000→/2001FF
```

③

Confirm the comment management table address and press the **SET** key if the displayed set data is OK.

. The comment management table data is initialized.

④

```

KEY IN NO.= ■ [SET/CLS/RTY]
COMMENT CONTROL TABLE=/200000→/2001FF
NO.   PA LIMIT   COMMENT AREA
00    X :000-*** /*****-/*****
01    J :000-*** /*****-/*****
02    Y :000-*** /*****-/*****
03    Q :000-*** /*****-/*****
04    T :000-*** /*****-/*****
05    U :000-*** /*****-/*****
06    C :000-*** /*****-/*****
07    R :000-*** /*****-/*****
08    K :000-*** /*****-/*****
09    G :000-*** /*****-/*****
    
```

④ Example:  
Enter the comment of external input (X) in PCs as a resident comment.

Press **0 0**

. To change the address of the comment management table, press the **RTY** key.

⑤

```

COMMENT CONTROL TABLE=/200000→/2001FF
NO.   PA LIMIT   COMMENT AREA
00    X :000-   /-/
01    J :000-*** /*****-/*****
02    Y :000-*** /*****-/*****
03    Q :000-*** /*****-/*****
04    T :000-*** /*****-/*****
05    U :000-*** /*****-/*****
06    C :000-*** /*****-/*****
07    R :000-*** /*****-/*****
08    K :000-*** /*****-/*****
09    G :000-*** /*****-/*****
    
```

(a) (b)

⑤ Set the range of the comment load

Example:  
Loads the comments of X000--XOFF starting at /200200.

a) **0 F F SET**

b) **2 0 0 2 0 0 SET**

. Press the **DEL** key at (a) if comments are not to be loaded.

⑥

```

KEY IN NO.= ■ [SET/CLS]
COMMENT CONTROL TABLE=/200000→/2001FF
NO.   PA LIMIT   COMMENT AREA
00    X :000-OFF /200200-/2011FF
01    J :000-*** /*****-/*****
02    Y :000-*** /*****-/*****
03    Q :000-*** /*****-/*****
04    T :000-*** /*****-/*****
05    U :000-*** /*****-/*****
06    C :000-*** /*****-/*****
07    R :000-*** /*****-/*****
08    K :000-*** /*****-/*****
09    G :000-*** /*****-/*****
    
```

⑥ Confirm the range (COMMENT AREA)

Note:  
A comment requires 16 bytes per symbol.

**SET** ... Press when the setting is OK. To change the contents of the setting, repeat the operations beginning with Step ④.

## 12 COMMENT INPUT/OUTPUT

---

⑦

```
FLOPPY→PCS
COMMENT OK? ■ [NO/SET/CLS]
-----
COMMENT STATUS
-----
1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME.. .CMT
```

⑦ Enter a comment file to be loaded

Example:  
Register the "PRT.CMT" file.

Press **1 P R T SET** .

⑧

```
FLOPPY→PCS
COMMENT OK? ■ [NO/SET/CLS]
-----
COMMENT STATUS
-----
1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME..PRT .CMT
```

⑧ Example:  
"PRT.CMT" has been registered.

**SET** ... Starts loading of the comments.

⑨

```
FLOPPY→PCS
START
-----
COMMENT STATUS
-----
1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME..PRT .CMT
```

⑨ A comment file is being loaded.

⑩

```
FLOPPY→PCS
SUCCESS!! STRIKE ANY KEY
-----
COMMENT STATUS
-----
1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME..PRT .CMT
```

⑩ The loading of a comment file has finished.  
Press any key.

## 12.6 Specifying Comment Display Status (SPECIFYING COMMENT DISPLAY STATUS)

This function specifies the comment display status, to allow comments to be displayed with the ladder circuit shown on the screen.

①

```

PSE MENU.
KEY IN MENU NO.=
-----
PSE SYSTEM MENU
-----
1::MCS
2::LPET(SQET)
3::SELECTED RENAMING
4::NESTING COPY&DELETE
5::TIME CHART MONITOR
6::MATRIX MONITOR
7::PRINT OUT
8::COMMENT READ&WRITE
9::COMMENT DISPLAY

```

① Press the **9** key.

②

```

COMMENT DISPLAY
COMMENT OK? ■ [NO./CLS]
-----
COMMENT STATUS
-----
1::DEVICE SELECTION...FLOPPY
2::DISPLAY MODE.....MANUAL
3::COMMENT FILE NAME... .CMT

```

② Using the **1** to **3** keys specify how comments are to be displayed in the circuit diagram.

- See the description of 'Comment Status Management'.

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# 13 PRINTER OUTPUT

## 13 PRINTER OUTPUT

### 13.1 Function of Printer Output

- Printer operation should be performed after a ladder program has been loaded into the PSE.

| Printer Output |                                                            |                                                                      |
|----------------|------------------------------------------------------------|----------------------------------------------------------------------|
| 1              | ALL PRINTOUT<br>Outputting a number of lists               | Outputs items, No.2 thru No. 9, in succession (necessary list only). |
| 2              | TITLE AND FILE HEADER<br>Output of title and file header   | See p. 270                                                           |
| 3              | MEMORY STATUS LIST<br>Output of memory status              | See p. 271                                                           |
| 4              | LPET LIST<br>Output of LPET list                           | See p. 272                                                           |
| 5              | LADDER CIRCUIT LIST<br>Output circuit list output          | See p. 273                                                           |
| 6              | PRESET DATA LIST<br>Output of preset data                  | See p. 281                                                           |
| 7              | DEVICE USAGE LIST<br>Output device-usage                   | See p. 282                                                           |
| 8              | CROSS REFERENCE LIST<br>Output of cross reference list     | See p. 283                                                           |
| 9              | COIL REFERENCE LIST<br>Output of coil cross reference list | See p. 284                                                           |
| A              | MEMORY DUMP LIST<br>Output memory dump list                | See p. 285                                                           |
| B              | COMMENT LIST<br>Output of comment list                     | See p. 286                                                           |





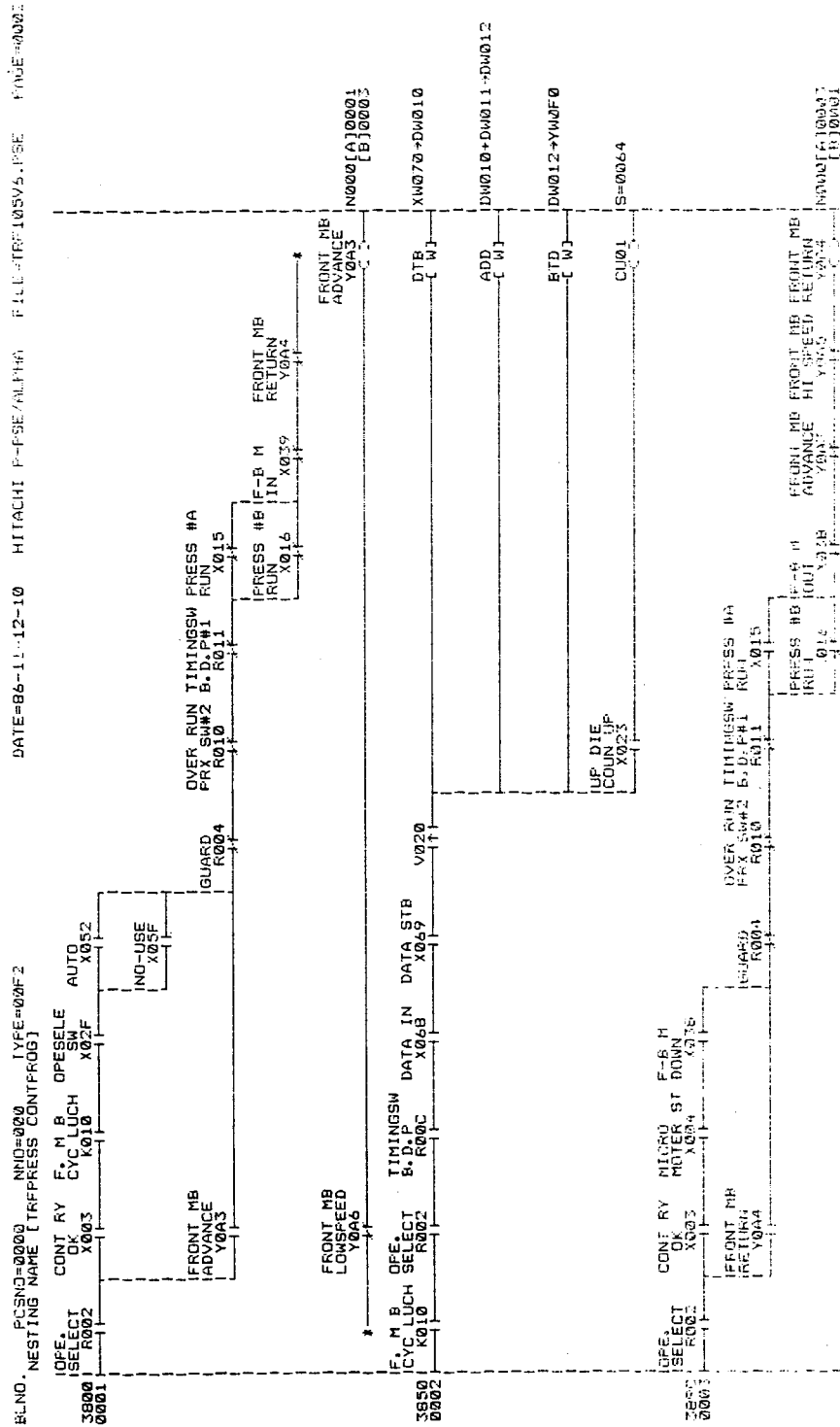
② Memory Status List

|                          |           |                  |         |             |                   |           |
|--------------------------|-----------|------------------|---------|-------------|-------------------|-----------|
| PCSN0=0000               | TYPE=00F2 | DATA=86-11-12-10 | HITACHI | P-PSE/ALPHA | FILE=TRF105V6.PSE | PAGE=0002 |
| MEMORY STATUS LIST       |           |                  |         |             |                   |           |
| PSE SYSTEM               | Ver4.0    | Rev0.0           |         |             |                   |           |
| PCS OS                   | Ver3.0    | Rev0.1           | (00F2)  |             |                   |           |
| T (TIMER)                | :         | T000-T0FF        | (256)   |             |                   |           |
| U (ONE SHOT)             | :         | U000-U03F        | (064)   |             |                   |           |
| C (COUNTER)              | :         | C000-C03F        | (064)   |             |                   |           |
| CPU LIKE                 | :         | RECEIVE ONLY     | (CLR)   |             |                   |           |
| SUB CPU LIKE             | :         | RECEIVE ONLY     | (CLR)   |             |                   |           |
| REMOTE I/O POINTS        |           | =2048            |         |             |                   |           |
| SEQUENCE CYCLE TIME      |           | =030             |         |             |                   |           |
| S-MODE FENCE ADDRESS     |           | =/70000          |         |             |                   |           |
| 10m SEC.TIMER(T000-T00F) |           | =NO USE          |         |             |                   |           |

③ LPET List

| PCSN0=0000      |         | TYPE=00F2 |  | DATE=86-11-12-10 |  |
|-----------------|---------|-----------|--|------------------|--|
| LPET(SOET) LIST |         |           |  |                  |  |
| NNO.            | ADDRESS | USED      |  |                  |  |
| 000             | /063E00 | 00384     |  |                  |  |
| 001             | /063E04 | -----     |  |                  |  |
| 002             | /063E08 | -----     |  |                  |  |
| 003             | /063E0C | -----     |  |                  |  |
| 004             | /063E10 | -----     |  |                  |  |
| 005             | /063E14 | -----     |  |                  |  |
| 006             | /063E18 | -----     |  |                  |  |
| 007             | /063E1C | -----     |  |                  |  |
| 008             | /063E20 | -----     |  |                  |  |
| 009             | /063E24 | -----     |  |                  |  |
| 00A             | /063E28 | -----     |  |                  |  |
| 00B             | /063E2C | -----     |  |                  |  |
| 00C             | /063E30 | -----     |  |                  |  |
| 00D             | /063E34 | -----     |  |                  |  |
| 00E             | /063E38 | -----     |  |                  |  |
| 00F             | /063E3C | -----     |  |                  |  |
| 010             | /063E40 | -----     |  |                  |  |
| 011             | /063E44 | -----     |  |                  |  |
| 012             | /063E48 | -----     |  |                  |  |
| 013             | /063E4C | -----     |  |                  |  |
| 014             | /063E50 | -----     |  |                  |  |
| 015             | /063E54 | -----     |  |                  |  |
| 016             | /063E58 | -----     |  |                  |  |

④ Ladder Circuit List



⑤ Preset Data List

| PCSN0=0000 | PRESET DATA LIST (TIMER) | TYPE=00F2 | 1003=0045 | 1004=0000 | 1005=0000 | HITACHI P-FSE/ALPHA | FILE=TRF105V6.FSE |
|------------|--------------------------|-----------|-----------|-----------|-----------|---------------------|-------------------|
| T000=0050  | T001=0000                | T002=0000 | T003=0045 | T004=0000 | T005=0000 | T006=0000           | T007=0000         |
| T008=0000  | T009=0000                | T010=0000 | T011=0000 | T012=0000 | T013=0000 | T014=0000           | T015=0000         |
| T016=0000  | T017=0000                | T018=0000 | T019=0000 | T020=0000 | T021=0000 | T022=0000           | T023=0000         |
| T026=0000  | T027=0000                | T028=0000 | T029=0000 | T030=0000 | T031=0000 | T032=0000           | T033=0000         |
| T036=0000  | T037=0000                | T038=0000 | T039=0000 | T040=0000 | T041=0000 | T042=0000           | T043=0000         |
| T046=0000  | T047=0000                | T048=0000 | T049=0000 | T050=0000 | T051=0000 | T052=0000           | T053=0000         |
| T056=0000  | T057=0000                | T058=0000 | T059=0000 | T060=0000 | T061=0000 | T062=0000           | T063=0000         |
| T066=0000  | T067=0000                | T068=0000 | T069=0000 | T070=0000 | T071=0000 | T072=0000           | T073=0000         |
| T076=0000  | T077=0000                | T078=0000 | T079=0000 | T080=0000 | T081=0000 | T082=0000           | T083=0000         |
| T086=0000  | T087=0000                | T088=0000 | T089=0000 | T090=0000 | T091=0000 | T092=0000           | T093=0000         |
| T096=0000  | T097=0000                | T098=0000 | T099=0000 | T100=0000 | T101=0000 | T102=0000           | T103=0000         |
| T106=0000  | T107=0000                | T108=0000 | T109=0000 | T110=0000 | T111=0000 | T112=0000           | T113=0000         |
| T116=0000  | T117=0000                | T118=0000 | T119=0000 | T120=0000 | T121=0000 | T122=0000           | T123=0000         |
| T126=0000  | T127=0000                | T128=0000 | T129=0000 | T130=0000 | T131=0000 | T132=0000           | T133=0000         |
| T136=0000  | T137=0000                | T138=0000 | T139=0000 | T140=0000 | T141=0000 | T142=0000           | T143=0000         |
| T146=0000  | T147=0000                | T148=0000 | T149=0000 | T150=0000 | T151=0000 | T152=0000           | T153=0000         |
| T156=0000  | T157=0000                | T158=0000 | T159=0000 | T160=0000 | T161=0000 | T162=0000           | T163=0000         |
| T166=0000  | T167=0000                | T168=0000 | T169=0000 | T170=0000 | T171=0000 | T172=0000           | T173=0000         |
| T176=0000  | T177=0000                | T178=0000 | T179=0000 | T180=0000 | T181=0000 | T182=0000           | T183=0000         |

13 PRINTER OUTPUT

⑥ Devices Usage List

| DEVICE            | FCSNO=0000       | TYPE=00F2        | DATE=86-11-12-10 | HITACHI P-PSE/ALPHA | FILE=TRF105V6.PSE |
|-------------------|------------------|------------------|------------------|---------------------|-------------------|
| DEVICE USAGE LIST |                  |                  |                  |                     |                   |
| DEVICE            | 0123456789ABCDEF | 0123456789ABCDEF | 0123456789ABCDEF | 0123456789ABCDEF    | 0123456789ABCDEF  |
| X000              | *****            | *****            | *****            | *****               | *****             |
| X040              | *****            | *****            | *****            | *****               | *****             |
| X080              | *****            | *****            | *****            | *****               | *****             |
| X0C0              | *****            | *****            | *****            | *****               | *****             |
| X100              | *****            | *****            | *****            | *****               | *****             |
| X140              | *****            | *****            | *****            | *****               | *****             |
| X180              | *****            | *****            | *****            | *****               | *****             |
| X1C0              | *****            | *****            | *****            | *****               | *****             |
| X200              | *****            | *****            | *****            | *****               | *****             |
| X240              | *****            | *****            | *****            | *****               | *****             |
| X280              | *****            | *****            | *****            | *****               | *****             |
| X2C0              | *****            | *****            | *****            | *****               | *****             |
| X300              | *****            | *****            | *****            | *****               | *****             |
| X340              | *****            | *****            | *****            | *****               | *****             |
| X380              | *****            | *****            | *****            | *****               | *****             |
| X3C0              | *****            | *****            | *****            | *****               | *****             |
| X400              | *****            | *****            | *****            | *****               | *****             |
| X440              | *****            | *****            | *****            | *****               | *****             |
| X480              | *****            | *****            | *****            | *****               | *****             |
| X4C0              | *****            | *****            | *****            | *****               | *****             |
| X500              | *****            | *****            | *****            | *****               | *****             |
| X540              | *****            | *****            | *****            | *****               | *****             |
| X580              | *****            | *****            | *****            | *****               | *****             |
| X5C0              | *****            | *****            | *****            | *****               | *****             |
| X600              | *****            | *****            | *****            | *****               | *****             |
| X640              | *****            | *****            | *****            | *****               | *****             |
| X680              | *****            | *****            | *****            | *****               | *****             |
| X6C0              | *****            | *****            | *****            | *****               | *****             |
| X700              | *****            | *****            | *****            | *****               | *****             |
| X740              | *****            | *****            | *****            | *****               | *****             |
| X780              | *****            | *****            | *****            | *****               | *****             |
| X7C0              | *****            | *****            | *****            | *****               | *****             |
| Y000              | *****            | *****            | *****            | *****               | *****             |
| Y010              | *****            | *****            | *****            | *****               | *****             |
| Y080              | *****            | *****            | *****            | *****               | *****             |
| Y0C0              | *****            | *****            | *****            | *****               | *****             |
| Y100              | *****            | *****            | *****            | *****               | *****             |
| Y140              | *****            | *****            | *****            | *****               | *****             |
| Y180              | *****            | *****            | *****            | *****               | *****             |
| Y1C0              | *****            | *****            | *****            | *****               | *****             |

X TOTAL USAGE POINTS = 0067

\* : USE  
 . : NO USE

⑦ Cross Reference List

TYPE=00F2

PCSN0=0000

DATE=66-11-12-10

HITACHI P-FSE/ALPHA

FILE=TRF105V6.FSE

FAGE=0004

CROSS REFERENCE LIST

| SYMBOL | COMMENT  | NNO    | BLND. |
|--------|----------|--------|-------|
| FX000  | EMERGEN  | [0000] | 0004  |
| FX001  | RT       | [0000] | 0004  |
| FX002  | LUB STA  | [0000] | 0004  |
| FX003  | C B OIL  | [0000] | 0003  |
| FX004  | CONT RY  | [0000] | 0004  |
| FX005  | MICRO    | [0000] | 0003  |
| FX006  | START    | [0000] | 0004  |
| FX007  | SD ADJ   | [0000] | 0004  |
| FX008  | UP CK    | [0000] | 0004  |
| FX009  | UP CK    | [0000] | 0004  |
| FX00A  | DW UNCK  | [0000] | 0004  |
| FX00B  | 1 CYCLE  | [0000] | 0004  |
| FX00C  | RETURN   | [0000] | 0004  |
| FX00D  | DRIVE    | [0000] | 0004  |
| FX00E  | NOT FOS  | [0000] | 0004  |
| FX00F  | RESET    | [0000] | 0004  |
| FX010  | CONT     | [0000] | 0004  |
| FX011  | MANU OPE | [0000] | 0004  |
| FX012  | INTING   | [0000] | 0004  |
| FX013  | EMERGIN  | [0000] | 0004  |
| FX014  | STOP     | [0000] | 0003  |
| FX015  | PRESS #A | [0000] | 0004  |
| FX016  | EMERGIN  | [0000] | 0001  |
| FX017  | RUN      | [0000] | 0001  |
| FX018  | STOP     | [0000] | 0003  |
| FX019  | EMERGIN  | [0000] | 0004  |
| FX01A  | STOP     | [0000] | 0004  |
| FX01B  | EMERGIN  | [0000] | 0004  |
| FX01C  | STOP     | [0000] | 0004  |
| FX01D  | EMERGIN  | [0000] | 0004  |
| FX01E  | STOP     | [0000] | 0004  |
| FX01F  | EMERGIN  | [0000] | 0004  |
| FX020  | STOP     | [0000] | 0004  |
| FX021  | EMERGIN  | [0000] | 0004  |
| FX022  | STOP     | [0000] | 0004  |
| FX023  | EMERGIN  | [0000] | 0004  |
| FX024  | STOP     | [0000] | 0004  |
| FX025  | EMERGIN  | [0000] | 0004  |
| FX026  | STOP     | [0000] | 0004  |
| FX027  | EMERGIN  | [0000] | 0004  |
| FX028  | STOP     | [0000] | 0004  |
| FX029  | EMERGIN  | [0000] | 0004  |
| FX02A  | STOP     | [0000] | 0004  |
| FX02B  | EMERGIN  | [0000] | 0004  |
| FX02C  | STOP     | [0000] | 0004  |
| FX02D  | EMERGIN  | [0000] | 0004  |
| FX02E  | STOP     | [0000] | 0004  |
| FX02F  | EMERGIN  | [0000] | 0004  |
| FX030  | STOP     | [0000] | 0004  |
| FX031  | EMERGIN  | [0000] | 0004  |
| FX032  | STOP     | [0000] | 0004  |
| FX033  | EMERGIN  | [0000] | 0004  |
| FX034  | STOP     | [0000] | 0004  |
| FX035  | EMERGIN  | [0000] | 0004  |
| FX036  | STOP     | [0000] | 0004  |
| FX037  | EMERGIN  | [0000] | 0004  |
| FX038  | STOP     | [0000] | 0004  |
| FX039  | EMERGIN  | [0000] | 0004  |
| FX03A  | STOP     | [0000] | 0004  |
| FX03B  | EMERGIN  | [0000] | 0004  |
| FX03C  | STOP     | [0000] | 0004  |
| FX03D  | EMERGIN  | [0000] | 0004  |
| FX03E  | STOP     | [0000] | 0004  |
| FX03F  | EMERGIN  | [0000] | 0004  |
| FX040  | STOP     | [0000] | 0004  |
| FX041  | EMERGIN  | [0000] | 0004  |
| FX042  | STOP     | [0000] | 0004  |
| FX043  | EMERGIN  | [0000] | 0004  |
| FX044  | STOP     | [0000] | 0004  |
| FX045  | EMERGIN  | [0000] | 0004  |
| FX046  | STOP     | [0000] | 0004  |
| FX047  | EMERGIN  | [0000] | 0004  |
| FX048  | STOP     | [0000] | 0004  |
| FX049  | EMERGIN  | [0000] | 0004  |
| FX04A  | STOP     | [0000] | 0004  |
| FX04B  | EMERGIN  | [0000] | 0004  |
| FX04C  | STOP     | [0000] | 0004  |
| FX04D  | EMERGIN  | [0000] | 0004  |
| FX04E  | STOP     | [0000] | 0004  |
| FX04F  | EMERGIN  | [0000] | 0004  |
| FX050  | STOP     | [0000] | 0004  |

⑧ Coil Cross Reference List

| PCSN0=0000                      |       | TYPE=00F2 |       | DATE=86-11-12-10 |       | HITACHI F-FSE/ALPHA FI |       |
|---------------------------------|-------|-----------|-------|------------------|-------|------------------------|-------|
| COIL REFERENCE LIST ( NNO=000 ) |       |           |       | Y000<->Y7FF      |       |                        |       |
| SYMBOL                          | BLNO. | SYMBOL    | BLNO. | SYMBOL           | BLNO. | SYMBOL                 | BLNO. |
| Y0000-                          | 0010  | Y0001-    | 0017  | Y0004-           | 0018  | Y0005-                 | 0020  |
| Y0008-                          | 0016  | Y0009-    | 0035  | Y000C-           | 0037  | Y000D-                 | 0030  |
| Y0010-                          | 0034  | Y0011-    | 0043  | Y001B-           | 0045  | Y001C-                 | 0046  |
| Y0018-                          | 0042  | Y0019-    | 0051  | Y0023-           | 0053  | Y0024-                 | 0054  |
| Y0028-                          | 0050  | Y0021-    | 0062  | Y002D-           | 0064  | Y002E-                 | 0056  |
| Y0030-                          | 0060  | Y0032-    | 0055  | Y0033-           | 0064  | Y0035-                 | 0068  |
| Y0038-                          | 0071  | Y0031-    | 0055  | Y003B-           | 0064  | Y003D-                 | 0068  |
| Y0080-                          |       | Y003A-    | 0030  | Y003C-           | 0030  | Y003E-                 |       |
| Y0088-                          |       | Y0081-    | 0027  | Y008A-           | 0028  | Y008B-                 | 0031  |
| Y0090-                          |       | Y0089-    | 0027  | Y008C-           | 0028  | Y008D-                 |       |
| Y0098-                          | 0032  | Y0091-    | 0033  | Y0094-           |       | Y0095-                 |       |
| Y00A0-                          |       | Y0092-    | 0033  | Y0097-           |       | Y009D-                 |       |
| Y00A8-                          |       | Y0099-    | 0033  | Y009A-           |       | Y009E-                 |       |
| Y00B0-                          |       | Y00A1-    |       | Y009C-           | 0024  | Y00A5-                 |       |
| Y00B8-                          |       | Y00A2-    |       | Y009D-           |       | Y00A6-                 |       |
| Y00F0-                          |       | Y00A3-    |       | Y009E-           |       | Y00A8-                 |       |
| Y00F8-                          |       | Y00A4-    | 0007  | Y009F-           |       | Y00AA-                 |       |
| Y0300-                          | 0015  | Y00A5-    |       | Y00A0-           |       | Y00AB-                 |       |
| Y0308-                          | 0076  | Y00A6-    |       | Y00A1-           |       | Y00AC-                 |       |
| Y0310-                          | 0084  | Y00A7-    |       | Y00A2-           |       | Y00AD-                 |       |
| Y0318-                          | 0094  | Y00A8-    |       | Y00A3-           |       | Y00AE-                 |       |
| Y0320-                          | 0059  | Y00A9-    |       | Y00A4-           |       | Y00AF-                 |       |
| Y0328-                          |       | Y00B0-    |       | Y00A5-           |       | Y00B0-                 |       |
|                                 |       | Y00B1-    |       | Y00A6-           |       | Y00B5-                 |       |
|                                 |       | Y00B2-    |       | Y00A7-           |       | Y00B8-                 |       |
|                                 |       | Y00B3-    |       | Y00A8-           |       | Y00BB-                 |       |
|                                 |       | Y00B4-    |       | Y00A9-           |       | Y00BD-                 |       |
|                                 |       | Y00B5-    |       | Y00AA-           |       | Y00BE-                 |       |
|                                 |       | Y00B6-    |       | Y00AB-           |       | Y00BF-                 |       |
|                                 |       | Y00B7-    |       | Y00AC-           |       | Y00C0-                 |       |
|                                 |       | Y00B8-    |       | Y00AD-           |       | Y0305-                 | 0072  |
|                                 |       | Y00B9-    |       | Y00AE-           |       | Y030D-                 |       |
|                                 |       | Y00BA-    |       | Y00AF-           |       | Y030E-                 |       |
|                                 |       | Y00BB-    |       | Y00B0-           | 0065  | Y0310-                 |       |
|                                 |       | Y00BC-    |       | Y00B1-           | 0065  | Y0315-                 | 0070  |
|                                 |       | Y00BD-    |       | Y00B2-           | 0065  | Y031D-                 |       |
|                                 |       | Y00BE-    |       | Y00B3-           | 0065  | Y031E-                 |       |
|                                 |       | Y00BF-    |       | Y00B4-           | 0065  | Y0325-                 | 0073  |
|                                 |       | Y00C0-    |       | Y00B5-           | 0065  | Y032D-                 |       |
|                                 |       | Y00C1-    |       | Y00B6-           | 0065  |                        |       |
|                                 |       | Y00C2-    |       | Y00B7-           | 0065  |                        |       |
|                                 |       | Y00C3-    |       | Y00B8-           | 0065  |                        |       |
|                                 |       | Y00C4-    |       | Y00B9-           | 0065  |                        |       |
|                                 |       | Y00C5-    |       | Y00BA-           | 0065  |                        |       |
|                                 |       | Y00C6-    |       | Y00BB-           | 0065  |                        |       |
|                                 |       | Y00C7-    |       | Y00BC-           | 0065  |                        |       |
|                                 |       | Y00C8-    |       | Y00BD-           | 0065  |                        |       |
|                                 |       | Y00C9-    |       | Y00BE-           | 0065  |                        |       |
|                                 |       | Y00CA-    |       | Y00BF-           | 0065  |                        |       |
|                                 |       | Y00CB-    |       | Y00C0-           | 0065  |                        |       |
|                                 |       | Y00CC-    |       | Y00C1-           | 0065  |                        |       |
|                                 |       | Y00CD-    |       | Y00C2-           | 0065  |                        |       |
|                                 |       | Y00CE-    |       | Y00C3-           | 0065  |                        |       |
|                                 |       | Y00CF-    |       | Y00C4-           | 0065  |                        |       |
|                                 |       | Y00D0-    |       | Y00C5-           | 0065  |                        |       |
|                                 |       | Y00D1-    |       | Y00C6-           | 0065  |                        |       |
|                                 |       | Y00D2-    |       | Y00C7-           | 0065  |                        |       |
|                                 |       | Y00D3-    |       | Y00C8-           | 0065  |                        |       |
|                                 |       | Y00D4-    |       | Y00C9-           | 0065  |                        |       |
|                                 |       | Y00D5-    |       | Y00CA-           | 0065  |                        |       |
|                                 |       | Y00D6-    |       | Y00CB-           | 0065  |                        |       |
|                                 |       | Y00D7-    |       | Y00CC-           | 0065  |                        |       |
|                                 |       | Y00D8-    |       | Y00CD-           | 0065  |                        |       |
|                                 |       | Y00D9-    |       | Y00CE-           | 0065  |                        |       |
|                                 |       | Y00DA-    |       | Y00CF-           | 0065  |                        |       |
|                                 |       | Y00DB-    |       | Y00D0-           | 0065  |                        |       |
|                                 |       | Y00DC-    |       | Y00D1-           | 0065  |                        |       |
|                                 |       | Y00DD-    |       | Y00D2-           | 0065  |                        |       |
|                                 |       | Y00DE-    |       | Y00D3-           | 0065  |                        |       |
|                                 |       | Y00DF-    |       | Y00D4-           | 0065  |                        |       |
|                                 |       | Y00E0-    |       | Y00D5-           | 0065  |                        |       |
|                                 |       | Y00E1-    |       | Y00D6-           | 0065  |                        |       |
|                                 |       | Y00E2-    |       | Y00D7-           | 0065  |                        |       |
|                                 |       | Y00E3-    |       | Y00D8-           | 0065  |                        |       |
|                                 |       | Y00E4-    |       | Y00D9-           | 0065  |                        |       |
|                                 |       | Y00E5-    |       | Y00DA-           | 0065  |                        |       |
|                                 |       | Y00E6-    |       | Y00DB-           | 0065  |                        |       |
|                                 |       | Y00E7-    |       | Y00DC-           | 0065  |                        |       |
|                                 |       | Y00E8-    |       | Y00DD-           | 0065  |                        |       |
|                                 |       | Y00E9-    |       | Y00DE-           | 0065  |                        |       |
|                                 |       | Y00EA-    |       | Y00DF-           | 0065  |                        |       |
|                                 |       | Y00EB-    |       | Y00E0-           | 0065  |                        |       |
|                                 |       | Y00EC-    |       | Y00E1-           | 0065  |                        |       |
|                                 |       | Y00ED-    |       | Y00E2-           | 0065  |                        |       |
|                                 |       | Y00EE-    |       | Y00E3-           | 0065  |                        |       |
|                                 |       | Y00EF-    |       | Y00E4-           | 0065  |                        |       |
|                                 |       | Y00F0-    |       | Y00E5-           | 0065  |                        |       |
|                                 |       | Y00F1-    |       | Y00E6-           | 0065  |                        |       |
|                                 |       | Y00F2-    |       | Y00E7-           | 0065  |                        |       |
|                                 |       | Y00F3-    |       | Y00E8-           | 0065  |                        |       |
|                                 |       | Y00F4-    |       | Y00E9-           | 0065  |                        |       |
|                                 |       | Y00F5-    |       | Y00EA-           | 0065  |                        |       |
|                                 |       | Y00F6-    |       | Y00EB-           | 0065  |                        |       |
|                                 |       | Y00F7-    |       | Y00EC-           | 0065  |                        |       |
|                                 |       | Y00F8-    |       | Y00ED-           | 0065  |                        |       |
|                                 |       | Y00F9-    |       | Y00EE-           | 0065  |                        |       |
|                                 |       | Y00FA-    |       | Y00EF-           | 0065  |                        |       |
|                                 |       | Y00FB-    |       | Y00F0-           | 0065  |                        |       |
|                                 |       | Y00FC-    |       | Y00F1-           | 0065  |                        |       |
|                                 |       | Y00FD-    |       | Y00F2-           | 0065  |                        |       |
|                                 |       | Y00FE-    |       | Y00F3-           | 0065  |                        |       |
|                                 |       | Y00FF-    |       | Y00F4-           | 0065  |                        |       |
|                                 |       | Y00G0-    |       | Y00F5-           | 0065  |                        |       |
|                                 |       | Y00G1-    |       | Y00F6-           | 0065  |                        |       |
|                                 |       | Y00G2-    |       | Y00F7-           | 0065  |                        |       |
|                                 |       | Y00G3-    |       | Y00F8-           | 0065  |                        |       |
|                                 |       | Y00G4-    |       | Y00F9-           | 0065  |                        |       |
|                                 |       | Y00G5-    |       | Y00FA-           | 0065  |                        |       |
|                                 |       | Y00G6-    |       | Y00FB-           | 0065  |                        |       |
|                                 |       | Y00G7-    |       | Y00FC-           | 0065  |                        |       |
|                                 |       | Y00G8-    |       | Y00FD-           | 0065  |                        |       |
|                                 |       | Y00G9-    |       | Y00FE-           | 0065  |                        |       |
|                                 |       | Y00GA-    |       | Y00FF-           | 0065  |                        |       |
|                                 |       | Y00GB-    |       | Y00G0-           | 0065  |                        |       |
|                                 |       | Y00GC-    |       | Y00G1-           | 0065  |                        |       |
|                                 |       | Y00GD-    |       | Y00G2-           | 0065  |                        |       |
|                                 |       | Y00GE-    |       | Y00G3-           | 0065  |                        |       |
|                                 |       | Y00GF-    |       | Y00G4-           | 0065  |                        |       |
|                                 |       | Y00G8-    |       | Y00G5-           | 0065  |                        |       |
|                                 |       | Y00G9-    |       | Y00G6-           | 0065  |                        |       |
|                                 |       | Y00HA-    |       | Y00G7-           | 0065  |                        |       |
|                                 |       | Y00HB-    |       | Y00G8-           | 0065  |                        |       |
|                                 |       | Y00HC-    |       | Y00G9-           | 0065  |                        |       |
|                                 |       | Y00HD-    |       | Y00HA-           | 0065  |                        |       |
|                                 |       | Y00HE-    |       | Y00HB-           | 0065  |                        |       |
|                                 |       | Y00HF-    |       | Y00HC-           | 0065  |                        |       |
|                                 |       | Y00I0-    |       | Y00HD-           | 0065  |                        |       |
|                                 |       | Y00I1-    |       | Y00HE-           | 0065  |                        |       |
|                                 |       | Y00I2-    |       | Y00HF-           | 0065  |                        |       |
|                                 |       | Y00I3-    |       | Y00I0-           | 0065  |                        |       |
|                                 |       | Y00I4-    |       | Y00I1-           | 0065  |                        |       |
|                                 |       | Y00I5-    |       | Y00I2-           | 0065  |                        |       |
|                                 |       | Y00I6-    |       | Y00I3-           | 0065  |                        |       |
|                                 |       | Y00I7-    |       | Y00I4-           | 0065  |                        |       |
|                                 |       | Y00I8-    |       | Y00I5-           | 0065  |                        |       |
|                                 |       | Y00I9-    |       | Y00I6-           | 0065  |                        |       |
|                                 |       | Y00IA-    |       | Y00I7-           | 0065  |                        |       |
|                                 |       | Y00IB-    |       | Y00I8-           | 0065  |                        |       |
|                                 |       | Y00IC-    |       | Y00I9-           | 0065  |                        |       |
|                                 |       | Y00ID-    |       | Y00IA-           | 0065  |                        |       |
|                                 |       | Y00IE-    |       | Y00IB-           | 0065  |                        |       |
|                                 |       | Y00IF-    |       | Y00IC-           | 0065  |                        |       |
|                                 |       | Y00J0-    |       | Y00ID-           | 0065  |                        |       |
|                                 |       | Y00J1-    |       | Y00IE-           | 0065  |                        |       |
|                                 |       | Y00J2-    |       | Y00IF-           | 0065  |                        |       |
|                                 |       | Y00J3-    |       | Y00J0-           | 0065  |                        |       |
|                                 |       | Y00J4-    |       | Y00J1-           | 0065  |                        |       |
|                                 |       | Y00J5-    |       | Y00J2-           | 0065  |                        |       |
|                                 |       | Y00J6-    |       | Y00J3-           | 0065  |                        |       |
|                                 |       | Y00J7-    |       | Y00J4-           | 0065  |                        |       |
|                                 |       | Y00J8-    |       | Y00J5-           | 0065  |                        |       |
|                                 |       | Y00J9-    |       | Y00J6-           | 0065  |                        |       |
|                                 |       | Y00KA-    |       | Y00J7-           | 0065  |                        |       |
|                                 |       | Y00KB-    |       | Y00J8-           | 0065  |                        |       |
|                                 |       | Y00KC-    |       | Y00J9-           | 0065  |                        |       |
|                                 |       | Y00KD-    |       | Y00KA-           | 0065  |                        |       |
|                                 |       | Y00KE-    |       | Y00KB-           | 0065  |                        |       |
|                                 |       | Y00KF-    |       | Y00KC-           | 0065  |                        |       |
|                                 |       | Y00L0-    |       | Y00KD-           | 0065  |                        |       |
|                                 |       | Y00L1-    |       | Y00KE-           | 0065  |                        |       |
|                                 |       | Y00L2-    |       | Y00L0-           | 0065  |                        |       |
|                                 |       | Y00L3-    |       | Y00L1-           | 0065  |                        |       |
|                                 |       | Y00L4-    |       | Y00L2-           | 0065  |                        |       |
|                                 |       | Y00L5-    |       | Y00L3-           | 0065  |                        |       |
|                                 |       | Y00L6-    |       | Y00L4-           | 0065  |                        |       |
|                                 |       | Y00L7-    |       | Y00L5-           | 0065  |                        |       |
|                                 |       | Y00L8-    |       | Y00L6-           | 0065  |                        |       |
|                                 |       | Y00L9-    |       | Y00L7-           | 0065  |                        |       |
|                                 |       | Y00MA-    |       | Y00L8-           | 0065  |                        |       |
|                                 |       | Y00MB-    |       | Y00L9-           | 0065  |                        |       |
|                                 |       | Y00MC-    |       | Y00MA-           | 0065  |                        |       |
|                                 |       | Y00MD-    |       | Y00MB-           | 0065  |                        |       |
|                                 |       | Y00ME-    |       | Y00MC-           | 0065  |                        |       |
|                                 |       | Y00MF-    |       | Y00MD-           | 0065  |                        |       |
|                                 |       | Y00N0-    |       | Y00ME-           | 0065  |                        |       |
|                                 |       | Y00N1-    |       | Y00MF-           | 0065  |                        |       |
|                                 |       | Y00N2-    |       | Y00N0-           | 0065  |                        |       |
|                                 |       | Y00N3-    |       | Y00N1-           | 0065  |                        |       |
|                                 |       | Y00N4-    |       | Y00N2-           | 0065  |                        |       |
|                                 |       | Y00N5-    |       | Y00N3-           | 0065  |                        |       |
|                                 |       | Y00N6-    |       | Y00N4-           | 0065  |                        |       |
|                                 |       | Y00N7-    |       | Y00N5-           | 0065  |                        |       |
|                                 |       | Y00N8-    |       | Y00N6-           | 0065  |                        |       |
|                                 |       | Y00N9-    |       | Y00N7-           | 0065  |                        |       |
|                                 |       | Y00OA-    |       | Y00N8-           | 0065  |                        |       |
|                                 |       | Y00OB-    |       | Y00N9-           | 0065  |                        |       |
|                                 |       | Y00OC-    |       | Y00OA-           | 0065  |                        |       |
|                                 |       | Y00OD-    |       | Y00OB-           | 0065  |                        |       |
|                                 |       | Y00OE-    |       | Y00OC-           | 0065  |                        |       |
|                                 |       | Y00OF-    |       | Y00OD-           | 0065  |                        |       |
|                                 |       | Y00P0-    |       | Y00OE-           | 0065  |                        |       |
|                                 |       | Y00P1-    |       | Y00OF-           | 0065  |                        |       |
|                                 |       | Y00P2-    |       | Y00P0-           | 0065  |                        |       |
|                                 |       | Y00P3-    |       | Y00P1-           | 0065  |                        |       |
|                                 |       | Y00P4-    |       | Y00P2-           | 0065  |                        |       |
|                                 |       | Y00P5-    |       | Y00P3-           | 0065  |                        |       |
|                                 |       | Y00P6-    |       | Y00P4-           | 0065  |                        |       |
|                                 |       | Y00P7-    |       | Y00P5-           | 0065  |                        |       |
|                                 |       | Y00P8-    |       | Y00P6-           | 0065  |                        |       |
|                                 |       | Y00P9-    |       | Y00P7-           | 0065  |                        |       |
|                                 |       | Y00QA-    |       | Y00P8-           | 0065  |                        |       |
|                                 |       | Y00QB-    |       | Y00P9-           | 0065  |                        |       |
|                                 |       | Y00QC-    |       | Y00QA-           | 0065  |                        |       |
|                                 |       | Y00QD-    |       | Y00QB-           | 0065  |                        |       |
|                                 |       | Y00QE-    |       | Y00QC-           | 0065  |                        |       |
|                                 |       | Y00QF-    |       | Y00QD-           | 0065  |                        |       |
|                                 |       | Y00R0-    |       | Y00QE-           | 0065  |                        |       |
|                                 |       | Y00R1-    |       | Y00QF-           | 0065  |                        |       |
|                                 |       | Y00R2-    |       | Y00R0-           | 0065  |                        |       |
|                                 |       | Y00R3-    |       | Y00R1-           | 0065  |                        |       |
|                                 |       | Y00R4-    |       | Y00R2-           | 0065  |                        |       |
|                                 |       | Y00R5-    |       | Y00R3-           | 0065  |                        |       |
|                                 |       | Y00R6-    |       | Y00R4-           | 0065  |                        |       |
|                                 |       | Y00R7-    |       | Y00R5-           | 0065  |                        |       |
|                                 |       | Y00R8-    |       | Y00R6-           | 0065  |                        |       |
|                                 |       | Y00R9-    |       | Y00R7-           | 0065  |                        |       |
|                                 |       | Y00SA-    |       | Y00R8-           | 0065  |                        |       |
|                                 |       | Y00SB-    |       | Y00R9-</         |       |                        |       |



⑨ Memory Dump List

| DUMP LIST (HEXADECIMAL) |      | TYPE=00FF 2 |      | HITACHI P-PSE/ALPHA |      |
|-------------------------|------|-------------|------|---------------------|------|
| /063800                 | 0007 | 0680        | 0008 | 0680                | 000A |
| /063820                 | 001A | 0690        | 001B | 0690                | 001C |
| /063840                 | 0010 | 0680        | 0010 | 0680                | 0010 |
| /063860                 | 2096 | 0650        | 6003 | 0650                | 6003 |
| /063880                 | 2097 | 0680        | 6004 | 0680                | 6004 |
| /063900                 | 6002 | 0620        | 6003 | 0620                | 6003 |
| /063920                 | 0048 | 06E0        | 0001 | 06E0                | 0001 |
| /063940                 | 9000 | 0780        | 8010 | 0780                | 8010 |
| /063960                 | 9010 | 06C0        | 8002 | 06C0                | 8002 |
| /063980                 | 2007 | 0770        | 20A4 | 0770                | 20A4 |
| /0639A0                 | 0002 | 0280        | 0003 | 0280                | 0003 |
| /0639C0                 | 004F | 0880        | 0000 | 0880                | 0000 |
| /0639E0                 | 0051 | 0830        | 0000 | 0830                | 0000 |
| /063A00                 | 0053 | 0620        | 6001 | 0620                | 6001 |
| /063A20                 | 0053 | 0470        | 6004 | 0470                | 6004 |
| /063A40                 | 20A4 | 0690        | 20A3 | 0690                | 20A3 |
| /063A60                 | 0020 | 0260        | 0001 | 0260                | 0001 |
| /063A80                 | 0030 | 0F05        | 1024 | 0F05                | 1024 |
| /063AA0                 | 0030 | 0680        | 6003 | 0680                | 6003 |
| /063AC0                 | 0030 | 0570        | 6003 | 0570                | 6003 |
| /063AE0                 | 0025 | 0680        | 6003 | 0680                | 6003 |
| /063B00                 | 600C | 0620        | 6002 | 0620                | 6002 |
| /063B20                 | 0011 | 0600        | 6002 | 0600                | 6002 |
| /063B40                 | 002C | 0600        | 600A | 0600                | 600A |
| /063B60                 | 2007 | 06E0        | 2001 | 06E0                | 2001 |
| /063B80                 | 7805 | 06E0        | 2004 | 06E0                | 2004 |
| /063BA0                 | 20BC | 0680        | 20B4 | 0680                | 20B4 |
| /063BC0                 | F41B | 0680        | 6010 | 0680                | 6010 |
| /063BE0                 | 6000 | 0670        | 6000 | 0670                | 6000 |
| /063C00                 | 7810 | 0680        | 6003 | 0680                | 6003 |
| /063C20                 | 0057 | 0680        | 6006 | 0680                | 6006 |
| /063C40                 | 6005 | 0600        | 6000 | 0600                | 6000 |
| /063C60                 | 0015 | 0680        | 6004 | 0680                | 6004 |
| /063C80                 | 20A3 | 0690        | 20A3 | 0690                | 20A3 |
| /063CA0                 | 8001 | 06E0        | 8001 | 06E0                | 8001 |
| /063CC0                 | 201A | 07E0        | 201A | 07E0                | 201A |
| /063CE0                 | 20A4 | 06E0        | 20A4 | 06E0                | 20A4 |
| /063D00                 | 20A4 | 06E0        | 20A4 | 06E0                | 20A4 |
| /063D20                 | 2321 | 06E0        | 8010 | 06E0                | 8010 |
| /063D40                 | 2030 | 0780        | 8010 | 0780                | 8010 |
| /063D60                 | 2300 | 0780        | 8010 | 0780                | 8010 |
| /063D80                 | 230F | 07E0        | 8010 | 07E0                | 8010 |
| /063DA0                 | 2310 | 07E0        | 8010 | 07E0                | 8010 |
| /063DC0                 | 2314 | 06E0        | 8010 | 06E0                | 8010 |
| /063DE0                 | 2319 | 07E0        | 8010 | 07E0                | 8010 |



### 13.3 Basic Operation (Starting with PSE Main Screen)

[STEP 1] PSE Main Screen

```
PSE MAIN
FUNC.OR S-PROG.KEY IN! ■
```

Press the **MENU** key.

[STEP 2] PSE Menu Screen

```
PSE MENU
KEY IN MENU NO.=■ [CLS]
```

Press the **7** key.

[STEP 3] Printer Menu Screen

```
PRINTER MENU
KEY IN MENU NO.= ■ [CLS]
```

---

PRINTER MENU

---

```
1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
```

---

Select a function from the menu using one of the keys **1** to **B** keys.

For reference:

To produce an output with comment, the time required for printing can be reduced, if the comment file has been loaded previously.

## 13 PRINTER OUTPUT

### [STEP 4] Select Desired Screen

The screens in [STEP5] and [STEP6] are displayed when      or  has been selected:

### [STEP 5]

COMMENT? ■ [SET:OUTPUT/CNT:PASS/CLS]

COMMENT OK ? [NO./SET/CLS]

This operation is necessary to specify the output method for a list selected in [STEP 3].

### Comment Selection Screen

- ① Output with comments attached: Proceed to the next operation by pressing the  key. For detail, see 13.4.
- ② Output with comments not attached: Press the  key. To proceed to [STEP 6]. A circuit diagram output without comments is not as wide as an output with comments.

### [STEP 6] Output Format Specify Screen

FORMAT OK ? [NO./SET/CLS]

#### PRINTOUT FORMAT

1::PRINTOUT CHARACTER.....GRAPHIC  
2::HEADER/DATE.....OUTPUT  
3::LADDER CROSS REFERENCE...PASS  
4::COIL COMMENT POSITION...SIDE  
5::BLOCK SPACE.....OPEN  
6::LADDER SPACE.....CLOSE  
7::SEARCH SYMBOL.....ALL REG.  
8::SEARCH CONTACT.....SEPARATE  
9::SEARCH DATA.....BL.NO.  
A::COIL REFERENCE SYMBOL...ALL REG.  
B::START PAGE NUMBER.....0001

### Output format specification screen

- ① Press the  key if the format shown on the screen is OK. Print out starts.
- ② To change the format, select the format by entering the number of the desired format. For detail, see 13.5.

## 13.4 Comment Specification Process

### 13.4.1 Outline

This function is required to output a list with comments. If comments are not desired this function is not required. The following three list may be output with comments:

- |     |   |                                                       |
|-----|---|-------------------------------------------------------|
| (1) | 1 | ALL PRINT OUT (2...9)<br>Multiple List Output         |
| (2) | 2 | LADDER CIRCUIT LIST<br>Output a circuit diagram list  |
| (3) | 8 | CROSS REFERENCE LIST<br>Output a cross reference list |

The following table contains the meaning of each item during the operation and the contents of process:

|                                                    | Function                                                                                   | Contents of Process                                                                                                                                         |
|----------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device Select<br>(DEVICE<br>SELECTION)             | NO SELECTION                                                                               | Comment data is not output.                                                                                                                                 |
|                                                    | FLOPPY                                                                                     | Comments are output from a floppy disk.                                                                                                                     |
|                                                    | RAM DISK                                                                                   | Comments are output from the RAM disk.                                                                                                                      |
|                                                    | PCS                                                                                        | Comments are output from the comments resident in the PCs memory.                                                                                           |
| Comment File<br>Name Set<br>(COMMENT<br>FILE NAME) | File name can not exceed 8 alpha-numeric characters and must begin with an English letter. | Specify the name of the file to be used for comment input/output. If "PCs memory" is specified at 'DEVICE SELECTION' then the comment file name is ignored. |

## 13 PRINTER OUTPUT

### 13.4.2 Operation

- ① ① Press the **SET** key.
- ② ② Press the **1** or **2** key. Press the **SET** key, if the specified contents (display screen) is correct.
- ③ ③ Press one of the keys **0** or **3** to select a device.
- ④ ④ Example of file name setting:  
Press **P R T SET**.
- ⑤ ⑤ When the file name is OK:  
Press the **SET** key.
- ⑥ ⑥ When the contents of the header is OK:  
Press the **SET** key.

### 13.5 Specifying Output Format

This process specifies the formats of various output lists. The items to be specified and their standard mode are listed in the following table.

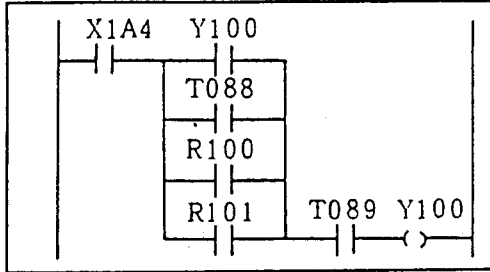
| No. | Item                   | Mode       |                       | Explanation                                        | Applied List Item     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
|-----|------------------------|------------|-----------------------|----------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|     |                        |            | Standard              |                                                    | Title and File Header | Memory Status         | LPET                  | Ladder Circuit        | Preset Data           | Device Usage          | Cross Reference       | Coil Cross Reference  | Memory Dump           | Comment               | Multiple Items        |                       |
| 1   | PRINTOUT CHARACTER     | GRAPHIC    | <input type="radio"/> | Print character                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | ASCII      | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2   | HEADER/DATE            | PASS       | <input type="radio"/> | Contents of file header                            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | OUTPUT     | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |
| 3   | LADDER CROSS REFERENCE | PASS       | <input type="radio"/> | Circuit diagram with cross reference               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | OUTPUT     | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 4   | COIL COMMENT POSITION  | SIDE       | <input type="radio"/> | Position of output coil comment                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | UPPER      | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 5   | BLOCK SPACE            | CLOSE      | <input type="radio"/> | Interval between sequence blocks                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | OPEN       | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 6   | LADDER SPACE           | CLOSE      | <input type="radio"/> | Interval between ladder circuits                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | OPEN       | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 7   | SEARCH SYMBOL          | REG.SYMBOL | <input type="radio"/> | Function symbols to be searched by cross reference | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | X+G REG.   | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
|     |                        | ALL REG.   | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 8   | SEARCH CONTACT         | SEPARATE   | <input type="radio"/> | Method of searching contacts by cross reference    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | EQUALIZE   | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 9   | SEARCH DATA            | BL.NO.     | <input type="radio"/> | Output method of search result                     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | COIL NO.   | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 10  | REFERENCE SYMBOL       | REG.SYMBOL | <input type="radio"/> | Function symbols to output                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | ALL REG.   | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 11  | DUMP DATA              | HEXA       | <input type="radio"/> | Type of dump data                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | DECIMAL    | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |
| 12  | START PAGE NUMBER      | 1 ↔ 9999   | <input type="radio"/> | Print start page No.                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|     |                        | SPACE      | <input type="radio"/> |                                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                       |                       |

# 13 PRINTER OUTPUT

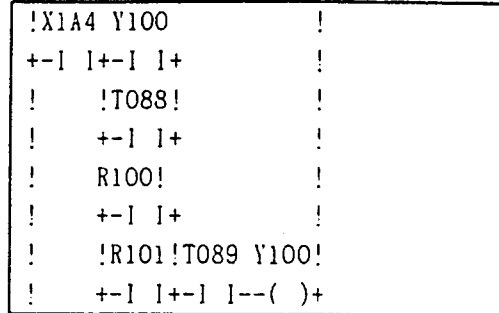
---

## (1) PRINTOUT CHARACTER

(GRAPHIC)



(ASCII)





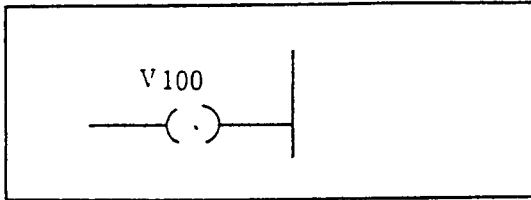
| Function (Key Top)  | GRAPHIC         | ASCII     |
|---------------------|-----------------|-----------|
| Relay               | ┆┆              | I I       |
| Relay               | ┆┆              | I/I       |
| Relay               | - ( ) -         | ( )       |
| Relay               | - [ ] -         | [ ]       |
| Relay               | -   +   -       | IUI       |
| Relay               | -   +   -       | IDI       |
| Branch              | -               | -         |
| Branch              | !               | !         |
| Branch              | ┆,┆,┆,┆,┆,┆,┆,┆ | + (Plus)  |
| Time                | (OFF)           | - (Minus) |
| Time Chart          | ■ (ON)          | = (Equal) |
| Rising (↑)          | ↑               | U         |
| Falling (↓)         | ↓               | D         |
| (→)                 | →               | R         |
| (←)                 | ←               | L         |
| Printer             | ■               | *         |
| Arithmetic Function | →               | :         |
| Matrix              | ○ (OFF)         | 0         |
| Matrix              | ● (ON)          | 1         |

- The lists may be printed with either GRAPHIC or ASCII characters as shown in the chart above. The selection is made in the PRINTOUT FORMAT menu.

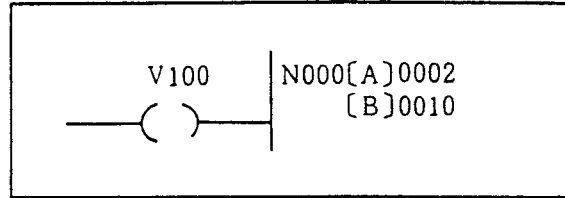


(3) LADDER CROSS REFERENCE

(PASS)



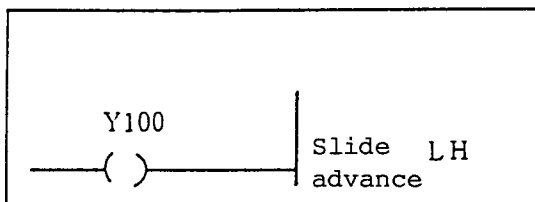
(OUTPUT)



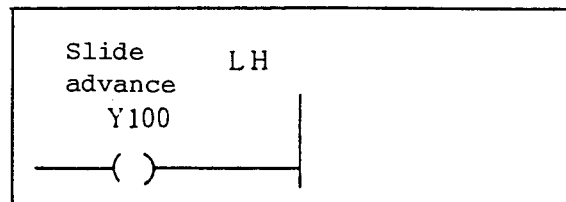
N 0 0 0 [A] 0 0 0 2  
 Block No. of the block containing  
 The contact instruction  
 Contact type  
 Number of the nest where  
 the contact instruction exists

(4) COIL COMMENT POSITION

(SIDE)



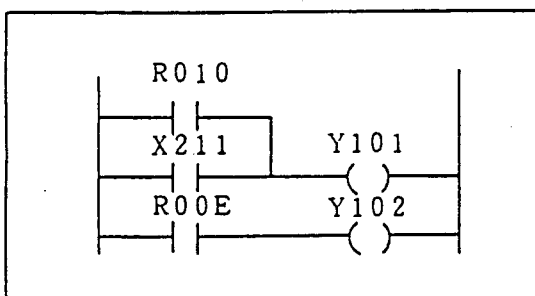
(UPPER)



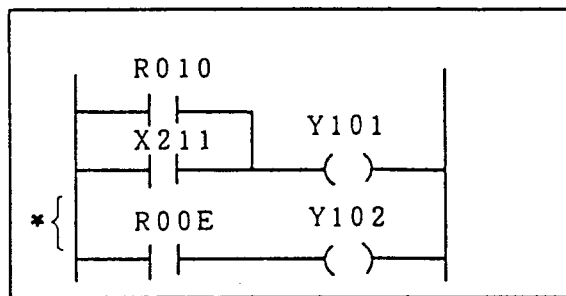
- When a cross reference is output on a circuit diagram list, an output coil comment may not be printed on the right side of the coil symbol.

(5) BLOCK SPACE

(CLOSE)



(OPEN)

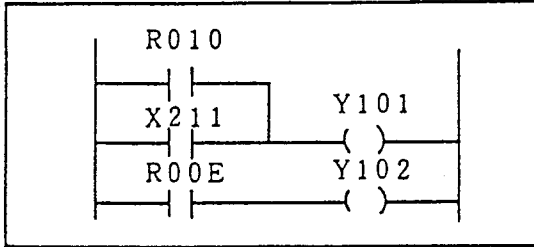


\* Sequence blocks are separated by one line

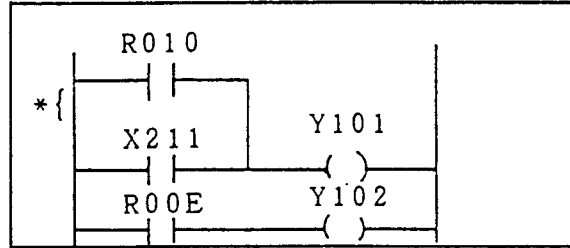
# 13. PRINTER OUTPUT

## (6) LADDER SPACE

(CLOSE)



(OPEN)



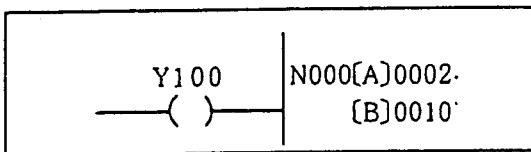
\* Two circuits in one sequence block are separated by one line.

## (7) SEARCH SYMBOL

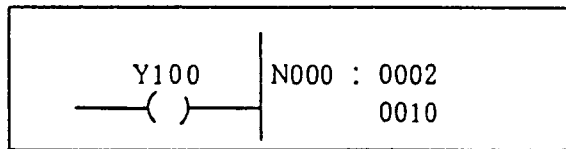
| Set Data    | Explanation                                        |
|-------------|----------------------------------------------------|
| REG. SYMBOL | Outputs cross reference of specified symbols only. |
| X+G REG.    | Outputs cross reference of X and G symbols.        |
| ALL REG.    | Outputs cross reference of all symbols.            |

## (8) SEARCH CONTACT

(SEPARATE)



(EQUALIZE)



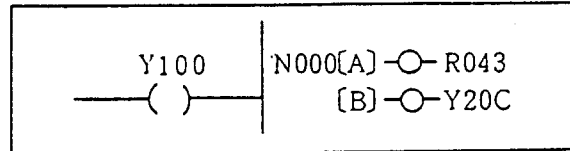
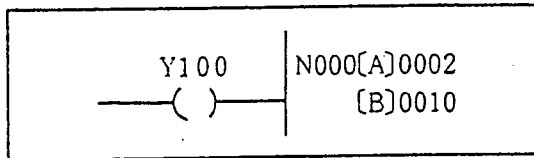
Example:

- Searches for the contacts of Y100, and separates [A] contacts from [B] contacts.
- Searches for the contacts of Y100 without separating [A] contacts from [B] contacts.

(9) SEARCH DATA

(BL. NO.)

(COIL NO.)



- If a cross reference list is output by "COIL NO.", all the output coil names of the blocks which contain the cross referenced contacts are output.

(10) REFERENCE SYMBOL

| Set Data    | Explanation                                                 |
|-------------|-------------------------------------------------------------|
| REG. SYMBOL | Outputs the coil cross reference list of specified symbols. |
| ALL REG     | Outputs the coil cross reference list of all symbols.       |

(11) DUMP DATA

| Set Data | Explanation                                                 |
|----------|-------------------------------------------------------------|
| HEXA     | Outputs the contents of the memory in hexadecimal notation. |
| DECIMAL  | Outputs the contents of the memory in decimal notation.     |

## 13 PRINTER OUTPUT

---

### (12) START PAGE NUMBER

| Set Data | Explanation                                     |
|----------|-------------------------------------------------|
| 1 ⇔ 9999 | Printing starts from the displayed page number. |
| SPACE    | Page numbers are not output.                    |

- The page number is incremented by 1 between "1 ⇔ 9999", and returns to 1 when exceeding '9999'.
- The page number is set to '1' when control is transferred to an output process from the printer menu.

### 13.6 Printer Output Interrupt

To stop (interrupt or terminate) the printer output, press the **RTY** key. Printing is stopped at a page change, and the following message is displayed.

```
PRINTER= ■ [CLS/CNT]
```

**CLS** ... Ends printing.

**CNT** ... Restarts the printing operation from the point where it was stopped.

- If any other key is pressed after pressing the **RTY** key but before a page change, the printer interrupt is canceled.

13.7 Output of Multiple Lists

①

```

PRINTER MENU
KEY IN NO.= ■ [CLS]

-----

PRINTER MENU

-----

1 :ALL PRINTOUT (2...9)
2 :TITLE AND FILE HEADER
3 :MEMORY STATUS LIST
4 :LPET(SQET) LIST
5 :LADDER CIRCUIT LIST
6 :PRESET DATA LIST
7 :DEVICE USAGE LIST
8 :CROSS REFERENCE LIST
9 :COIL REFERENCE LIST
A :MEMORY DUMP LIST
B :COMMENT LIST

-----
    
```

① Press the **1** key.

②

```

ALL PRINTOUT
ITEMS OK? ■ [NO./SET/CLS]

-----

PRINTOUT ITEMS

-----

1::TITLE AND FILE HEADER...OUTPUT
2::MEMORY STATUS LIST.....OUTPUT
3::LPET(SQET) LIST.....OUTPUT
4::LADDER CIRCUIT LIST....OUTPUT
5::PRESET DATA LIST.....OUTPUT
6::DEVICE USAGE LIST.....OUTPUT
7::CROSS REFERENCE LIST...OUTPUT
8::COIL REFERENCE LIST....OUTPUT

-----
    
```

② Specify the list to be output

Enter the list item No., and then select a status from "SELECTION MENU".

- 0** "PASS" ... Not output
- 1** "OUTPUT" ... Output

Press the **SET** key if the output status of the item displayed on the screen is correct.

③

```

ALL PRINTOUT
COMMENT? ■ [SET:OUTPUT/CNT:PASSED/CLS]
    
```

③ Specify comments

**SET** ... Comments exist.

See 13.4.

**CNT** ... No comments exist.



④

```
ALL PRINTOUT
FORMAT OK? ■ [NO./SET/CLS]

-----
                PRINTOUT FORMAT
-----
1::PRINTOUT CHARACTER... GRAPHIC
2::HEADER DATA.....OUTPUT
3::LADDER CROSS REFERENCE..PASS
4::BLOCK SPACE.....OPEN
5::LADDER SPACE.....CLOSE
6::SEARCH SYMBOL.....ALL REG.
7::SEARCH CONTACT.....SEPARATE
8::SEARCH DATA.....BL.NO.
9::REFERENCE SYMBOL.....ALL REG.
A::START PAGE NUMBER.....0001
-----
```

④

Specify the output format

Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.

### 13.8 Output of Title and File Header

①

```
PRINTER MENU
KEY IN NO.=[ ] [CLS]

-----
PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
```

①

Press the **2** key.

②

```
TITLE AND HEADER
FORMAT OK? [NO./SET/CLS]

-----
PRINTOUT FORMAT
-----

1::PRINTOUT CHARACTER... GRAPHIC
2::HEADER/DATA.....OUTPUT
-----
```

②

Specify the output format

Press the **SET** key if the list output format displayed on the screen is OK. See 13.5.

### 13.9 Output of Memory Status List

①

```

PRINTER MENU
KEY IN NO.=■ [CLS]

-----
PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
    
```

①

Press the **3** key.

②

```

MEMORY STATUS
FORMAT OK? ■ [NO./SET/CLS]

-----
PRINTOUT FORMAT
-----

1::PRINTOUT CHARACTER... GRAPHIC
2::HEADER DATA.....OUTPUT
3::START/PAGE NUMBER.....0001
-----
    
```

②

Specify the output format

Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.

13.10 Output of LPET List

①

```
PRINTER MENU
KEY IN NO.=■ [CLS]

-----
PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
```

① Press the **4** key.

②

```
LPET LIST
FORMAT OK? ■ [NO./SET/CLS]

-----
PRINTOUT FORMAT
-----

1::PRINTOUT CHARACTER... GRAPHIC
2::HEADER/DATA.....OUTPUT
3::START PAGE NUMBER.....0001
-----
```

② Specify the output format

Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.

## 13.11 Ladder Circuit List Output

### 13.11.1 Output of all circuits

①

```

PRINTER MENU
KEY IN NO.=■ [CLS]

-----

PRINTER MENU

-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----

```

①

Press the **5** key.

②

```

LADDER CIRCUIT
COMMENT? [SET:OUTPUT/CNT:PASSED/CLS]

```

②

Specify comment process

**SET**

... Comments exist.

See 13.4.

**CNT**

... No comments exist.

③

```

LADDER CIRCUIT
KEY IN NO.=■ [CLS]

-----

LADDER CIRCUIT

-----

1::ALL LADDER
2::NESTING LADDER
3::BLOCK LADDER
-----

```

③

Press the **1** key.

## 13 PRINTER OUTPUT

④

```
ALL LADDER
FORMAT OK? ■ [NO./SET/CLS]

-----
PRINTOUT FORMAT
-----
1::PRINTOUT CHARACTER.....GRAPHIC
2::HEADER/DATA.....OUTPUT
3::LADDER CROSS REFERENCE...PASS
4::BLOCK SPACE.....OPEN
5::LADDER SPACE.....CLOSE
6::SEARCH CONTACT.....SEPARATE
7::SEARCH DATA.....BL.NO.
-----
8::START PAGE NUMBER.....0001
```

④

Specify output format

Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.

### 13.11.2 Output of circuits in units of nesting Nos.

①

```
PRINTER MENU
KEY IN NO.=■ [CLS]

-----
PRINTOUT MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
```

①

Press the **5** key.

②

```
LADDER CIRCUIT
COMMENT? [SET:OUTPUT/CNT:PASSED/CLS]
```

②

Specify comment process

**SET** ... Comments exist.

See 13.4.

**CNT** ... No comments exist.

③

```
LADDER CIRCUIT
KEY IN NO.= ■ [CLS]

-----
                LADDER CIRCUIT
-----
1::ALL LADDER
2::NESTING LADDER
3::BLOCK LADDER
-----
```

③

Press the **2** key.

④

```
NESTING LADDER

                NNO.= ■ ←→
                   ↑   ↑
                  (a)  (b)
```

④

Specify a range of nest to be output.

Example:  
N000-N020

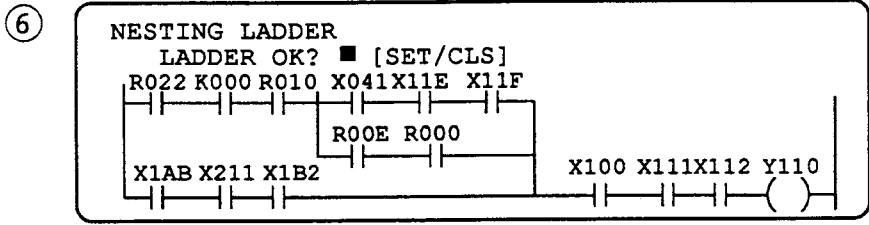
- a) **0** **0** **0** **SET**
- b) **0** **2** **0** **SET**

- . To output one nest, both a) and b) must specify the same No.
- . "000" is displayed if the **CNT** is pressed at a).
- . "END" is displayed if the **CNT** is pressed at b). This indicates the last nest No.

# 13 PRINTER OUTPUT

⑤ NESTING LADDER  
 KEY IN = [SET/CLS/RTY]  
 NNO.=000 ↔ 020

⑤ Press the **SET** key if the displayed nest No. range is correct.



⑥ Displays the first circuit of the first nest specified.

- ⏴ ... Forward read
- ⏵ ... Reverse read

Press the **SET** key if the circuit on the screen is OK.

⑦ NESTING LADDER  
 FORMAT OK? ■ [NO./SET/CLS]

---

PRINTOUT FORMAT

---

1::PRINTOUT CHARACTER.....GRAPHIC  
 2::HEADER/DATA.....OUTPUT  
 3::LADDER CROSS REFERENCE...PASS  
 4::BLOCK SPACE.....OPEN  
 5::LADDER SPACE.....CLOSE  
 6::SEARCH CONTACT.....SEPARATE  
 7::SEARCH DATA.....BL.NO.

---

8::START PAGE NUMBER.....0001

⑦ Specify the output format

Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.



## 13.11.3 Output of circuits in units of sequence blocks

①

```

PRINTER MENU
KEY IN NO.=■ [CLS]

-----

                PRINTER MENU

-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----

```

①

Press the **5** key.

②

```

LADDER CIRCUIT
COMMENT? ■ [SET:OUTPUT/CNT:PASSED/CLS]

```

②

Specify comment process

**SET** ... Comments exist.

See 13.4.

**CNT** ... No comments exist.

③

```

LADDER CIRCUIT
KEY IN NO.=■ [CLS]

-----

                LADDER CIRCUIT

-----

1::ALL LADDER
2::NESTING LADDER
3::BLOCK LADDER
-----

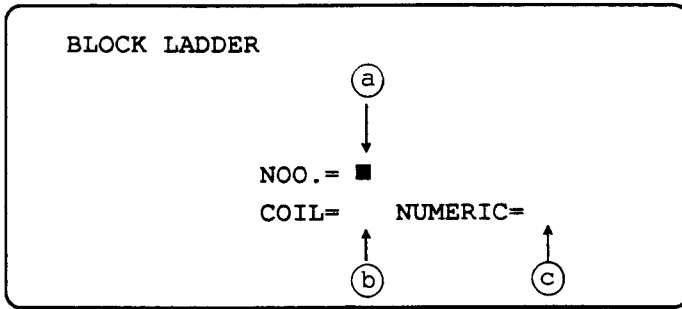
```

③

Press the **3** key.

# 13 PRINTER OUTPUT

④



④

Specify the desired nest No., the name of the coil to be output first, and the number of blocks to be output.

Example:  
Output five  
blocks  
starting with  
-○-Y100 of  
Nest/000.

a)

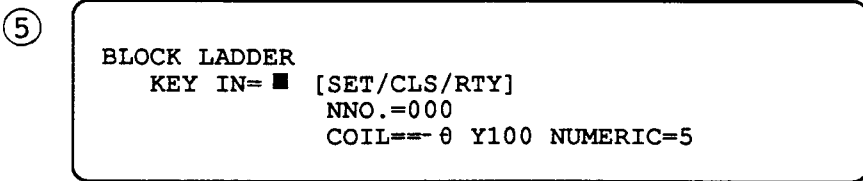
b)

c)

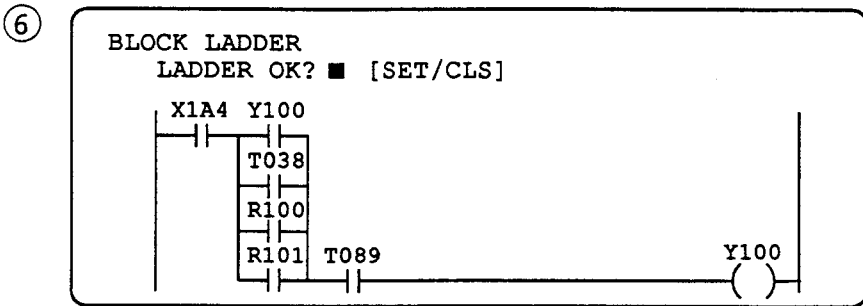
• "000" is displayed if the  is pressed at a).

• "TOP" is displayed if the  is pressed at b). This indicates the first circuit in the nest No. specified at a).

. "END" is displayed if the **CNT** is pressed at c). This indicates the last circuit in the nest No. specified at a).



⑤ Press the SET key if the set data displayed is OK.



⑥ Displays the first circuit of the group of circuit blocks specified.

⏴ ... Forward read

⏵ ... Reverse read

Press the **SET** key if the circuit on the screen is correct.

## 13 PRINTER OUTPUT

---

⑦

```
BLOCK LADDER
FORMAT OK? ■ [NO./SET/CLS]
```

---

PRINTOUT FORMAT

---

```
1::PRINTOUT CHARACTER.....GRAPHIC
2::HEADER DATA.....OUTPUT
3::LADDER CROSS REFERENCE...PASS
4::BLOCK SPACE.....OPEN
5::LADDER SPACE.....CLOSE
6::SEARCH CONTACT.....SEPARATE
7::SEARCH DATA.....BL.NO.
8::START PAGE NUMBER.....0001
```

---

⑦

Specify the  
output format

Press the  
**SET** key if  
the list  
output format  
shown on the  
screen is OK.  
See 13.5.

13.12 Output of Preset Data

①

```

PRINTER MENU
KEY IN NO.= [CLS]

-----

PRINTER MENU

-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
    
```

① Press the **6** key.

②

```

PRESET DATA LIST
KEY IN NO.= [CLS]

-----

PRESET DATA LIST

-----

1::ALL PRESET DATA LIST
2::TIMER LIST
3::ONESHOT LIST
4::COUNTER LIST
    
```

② Select a desired item by pressing one of the keys from **1** to **4** keys.

- 1**: All list
- 2**: Timer List, only
- 3**: One-Shot List, only
- 4**: Counter List, only

③

```

TITLE AND HEADER
FORMAT OK? [NO./SET/CLS]

-----

PRINTOUT FORMAT

-----

1::PRINTOUT CHARACTER.....GRAPHIC
2::HEADER/DATA.....OUTPUT
3::START PAGE NUMBER.....0001
    
```

③ Specify the output format

Press the **SET** key if the list output format shown on the screen is OK. See 13.5.

13.13 Output of Device-Usage List

①

```
PRINTER MENU
KEY IN NO.= [CLS]

-----
PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
```

①

Press the **7** key.

②

```
USAGE LIST
FORMAT OK? [NO./SET/CLS]

-----
PRINTOUT FORMAT
-----

1::PRINTOUT CHARACTER.....GRAPHIC
2::HEADER/DATA.....OUTPUT
3::START PAGE NUMBER.....0001
-----
```

②

Specify the output format

Press the **SET** key if the list output format shown on the screen is OK. See 13.5.

13.14 Output of Cross Reference List

①

```

PRINTER MENU
KEY IN NO.= ■ [CLS]

-----
                PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
    
```

① Press the **8** key.

②

```

CROSS REFERENCE
COMMENT?= ■ [SET:OUTPUT/CNT:PASSED/CLS]
    
```

② Specify comment process

**SET** ... Comments exist.

See 13.4.

**CNT** ... No comments exist.

③

```

CROSS REFERENCE
FORMAT OK? [NO./SET/CLS]

-----
                PRINTOUT FORMAT
-----

1::PRINTOUT CHARACTER.....GRAPHIC
2::HEADER/DATA.....OUTPUT
3::SEARCH SYMBOL.....ALL REG.
4::SEARCH CONTACT.....SEPARATE
5::SEARCH COIL DATA.....BL.NO.
6::START PAGE NUMBER.....0001
    
```

③ Specify the output format

Press the **SET** key if the list output format shown on the screen is OK. See 13.5.

## 13 PRINTER OUTPUT

### 13.15 Output of Coil Cross Reference List

①

```
PRINTER MENU
KEY IN NO.=■ [CLS]

-----
PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
```

①

Press the **9** key.

②

```
COIL REFERENCE
KEY IN NO.=■ [CNT:ALL/CLS]
```

②

Specify the desired nest No.

Example: N000

**0 0 0 SET**

To output a list to all process Nos.:

Press the **CNT** KEY.

③

```
COIL REFERENCE
FORMAT OK? [NO./SET/CLS]

-----
PRINTOUT FORMAT
-----

1::PRINTOUT CHARACTER.....GRAPHIC
2::HEADER/DATA.....OUTPUT
3::REFERENCE SYMBOL.....ALL REG.
4::START PAGE NUMBER.....0001
-----
```

③

Specify the output format

Press the **SET** key if the list output format shown on the screen is OK. See 13.5.



### 13.16 Output Memory Dump List

①

```

PRINTER MENU
  KEY IN NO.=■ [CLS]

-----
                PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
    
```

① Press the **A** key.

②

```

MEMORY DUMP
  DUMP ADDR.=/ ■ →/
                ↑      ↑
                (a)    (b)
    
```

② Specify the address range to be output.

Example:  
/61000--61FFE

a) **6 1 0 0 0 SET**

b) **6 1 F F F SET**

③

```

MEMORY DUMP
  DUMP ADDR.=/61000→/61FFE DATA OK? ■[SET/CLS/RTY]
    
```

③ Press the **SET** key if the displayed address data is OK.

④

```

MEMORY DUMP
  FORMAT OK? [NO./SET/CLS]

-----
                PRINTOUT FORMAT
-----

1::PRINTOUT CHARACTER.....GRAPHIC
2::DUMP DATA.....HEXA
3::START PAGE NUMBER.....0001
    
```

④ Specify the output format

Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.

### 13.17 Output of Comment List

#### 13.17.1 Output of all comments

①

```
PRINTER MENU
KEY IN NO.= [CLS]

-----
PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
```

①

Press the **B** key.

②

```
COMMENT LIST
COMMENT OK? [NO./SET?/CLS]

-----
COMMENT STATUS
-----

1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME... .CMT
-----
```

②

Specify a file name

(The operation is the same as that of Specify Comment Process. See 13.4.)

Example:  
Specify 'PRT.CMT' file.

**2 R P T SET**

③

```
COMMENT LIST
COMMENT OK? [NO./SET/CLS]

-----
COMMENT STATUS
-----

1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME... .CMT
-----
```

③

Press the **SET** key if the contents displayed are OK.

④

```

COMMENT LIST
KEY IN NO.=[CLS]
-----
COMMENT LIST MENU
-----
1::ALL LIST
2::PARTIAL LIST
-----
    
```

④

Press the **1** key.

⑤

```

ALL COMMENT
FORMAT OK? ■ [NO./SET/CLS]
-----
PRINTOUT FORMAT
-----
1::PRINTOUT CHARACTER.....GRAPHIC
2::START PAGE NUMBER.....0001
-----
    
```

⑤

Specify the output format

Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.

## 13 PRINTER OUTPUT

### 13.17.2 Output of certain comments

①

```
PRINTER MENU
KEY IN NO.=■ [CLS]

-----
PRINTER MENU
-----

1::ALL PRINTOUT(2...9)
2::TITLE AND FILE HEADER
3::MEMORY STATUS LIST
4::LPET(SQET) LIST
5::LADDER CIRCUIT LIST
6::PRESET DATA LIST
7::DEVICE USAGE LIST
8::CROSS REFERENCE LIST
9::COIL REFERENCE LIST
A::MEMORY DUMP LIST
B::COMMENT LIST
-----
```

① Press the **B** key.

②

```
COMMENT LIST
COMMENT OK? [NO./SET/CLS]

-----
COMMENT STATUS
-----

1::DRIVE SELECTION....FLOPPY
2::COMMENT FILE NAME...PRT .CMT
-----
```

② Specify a file name

(The operation is the same as that of Specify Comment Process. See 13.4.)

Example:  
Specify 'PRT.CMT' file.

**2 P R T SET**

③

```
COMMENT LIST
COMMENT OK? ■ [NO./SET?/CLS]

-----
COMMENT STATUS
-----

1::DEVICE SELECTION....FLOPPY
2::COMMENT FILE NAME... .CMT
-----
```

③ Press the **SET** key if the contents displayed are OK.

④

```

COMMENT LIST
KEY IN NO. [CLS]
-----
COMMENT LIST MENU
-----
1::ALL LIST
2::PARTIAL LIST
-----
    
```

④

Press the **2** key.

⑤

```

PARTIAL COMMENT
KEY IN SELECTION NO. [CLS]
-----
COMMENT LIST MENU
-----
00 :X
01 :J
02 :Y
03 :Q
   :
-----
    
```

⑤

Specify the symbol of a comment being output.

Example:

Output a comment of Y.

**0 2**

⑥

```

PARTIAL COMMENT
KEY IN SELECTION NO. [CLS]
-----
BLOCK MENU
-----
00 :000-0FF
01 :100-1FF
02 :200-2FF
03 :300-3FF
CNT:ALL
-----
    
```

⑥

Specify the range of output.

Example: Y100 -- Y1FF

Press the **1** key.

To output the entire range:

Press the **CNT** key.

⑦

```

PARTIAL COMMENT
FORMAT OK? ■ [NO./SET/CLS]
-----
PRINTOUT FORMAT
-----
1::PRINTOUT CHARACTER.....GRAPHIC
2::START PAGE NUMBER.....0001
-----
    
```

⑦

Specify the output format

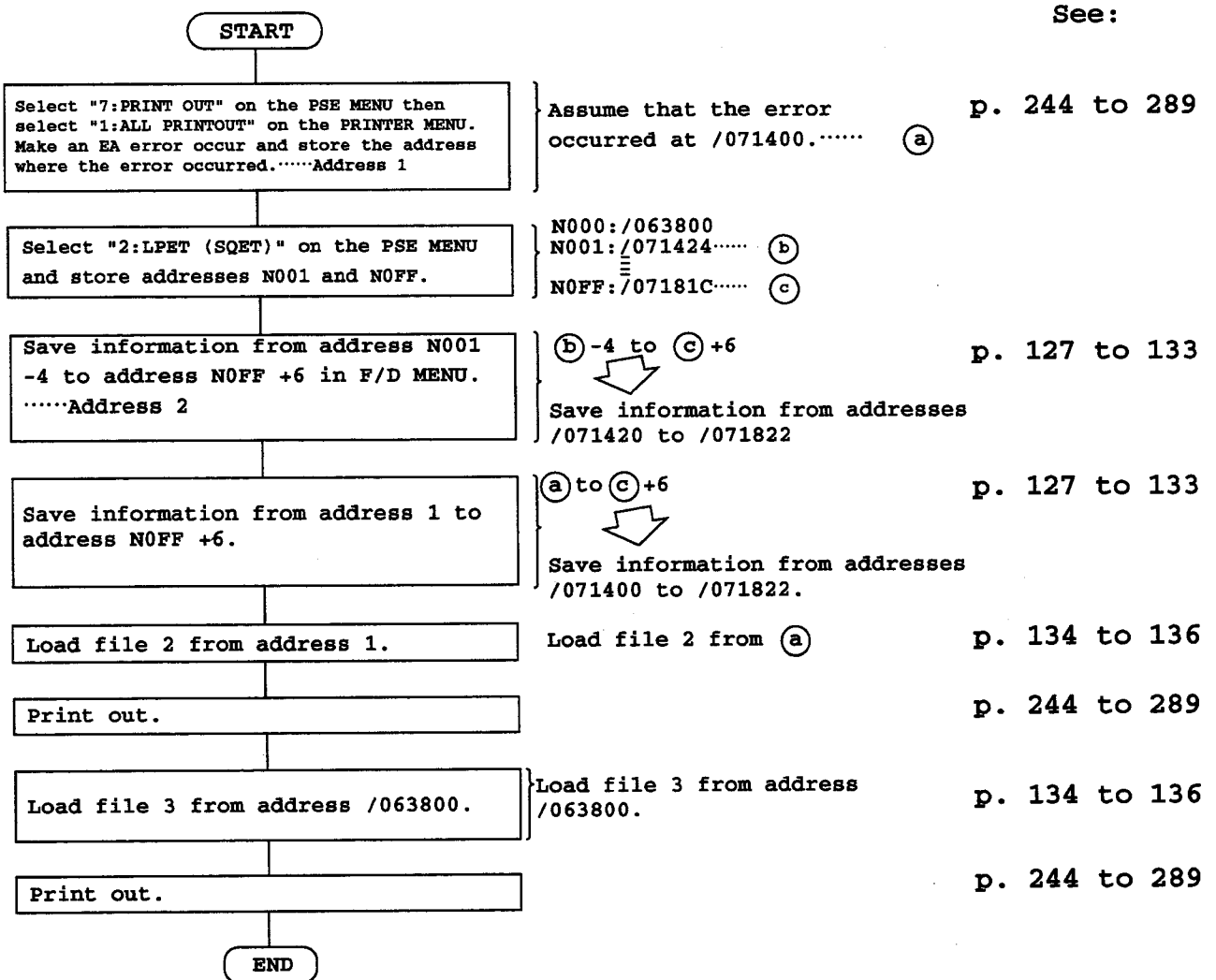
Press the **SET** key if the list output format displayed on the screen is correct. See 13.5.

13.18 Print out when an Error Code EA Occurs

Printing out the ladder program when the ladder circuit block overflow error (error code EA) occurs.

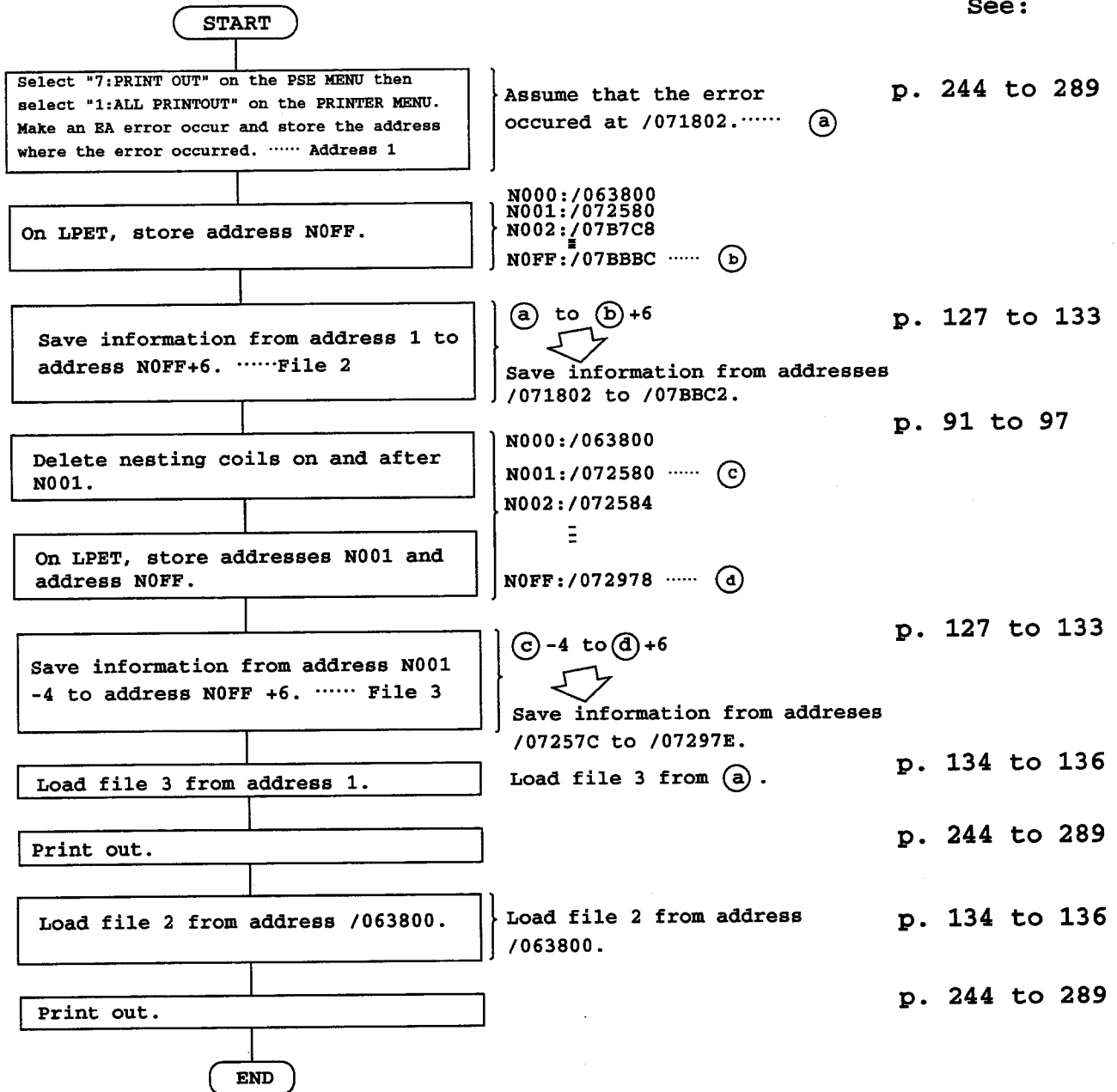
- Start up CPMS SYS in HPC-6000-20 and print out the ladder program as shown in this manual.
- When you print out the ladder program through LADDER SYS in HPC-6000-05, devide the ladder circuit first as follows.

13.18.1 When an EA error occurs in the ladder circuit with one nesting coil N000 :



13.18.2 When an EA error occurs at N000 in the ladder circuit with more than two nesting coils :

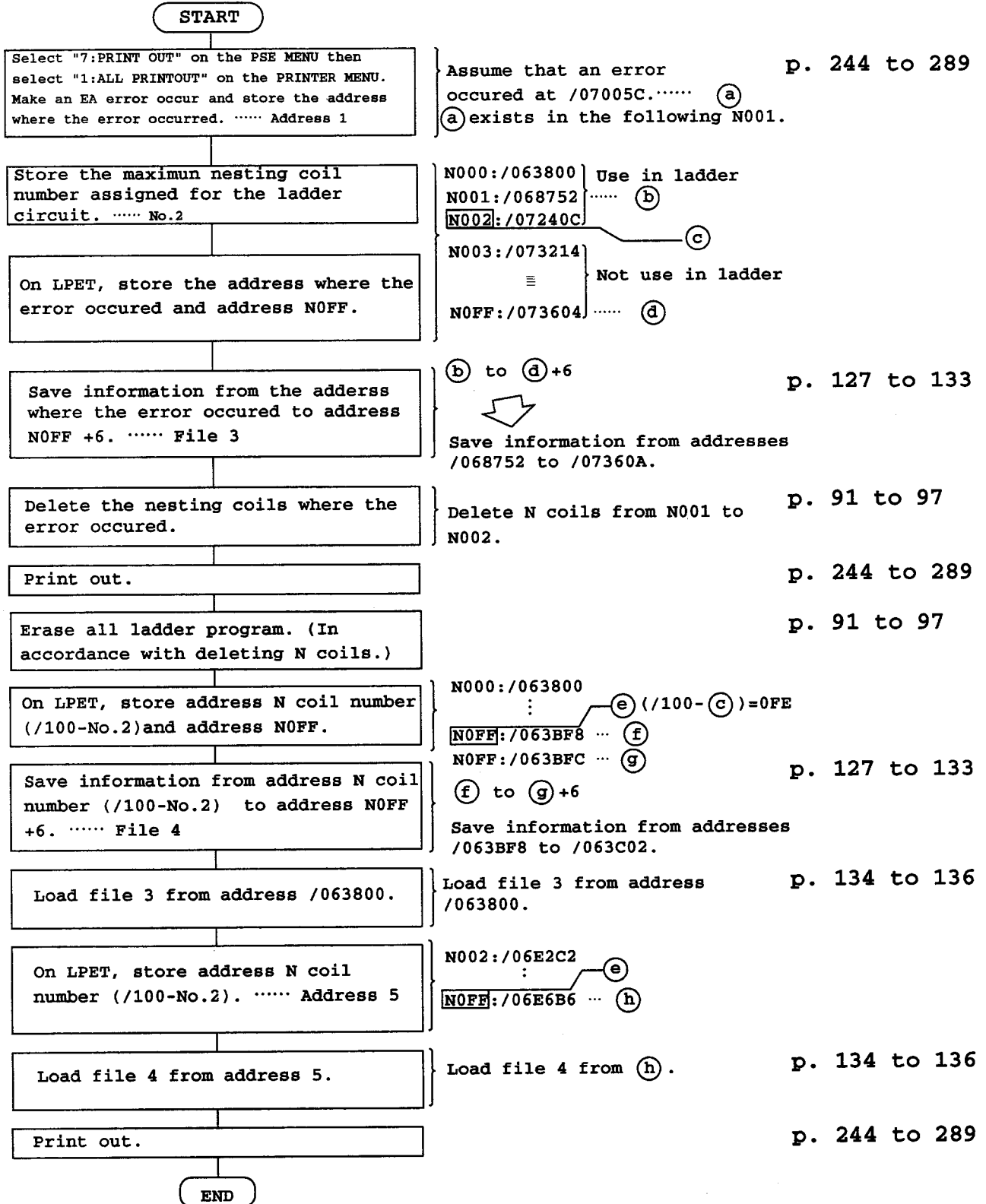
See:



# 13 PRINTER OUTPUT

## 13.18.3 When an EA error occurs at an address other than N000 in the ladder circuit with more than two nesting coils :

See:



\* Continue the operation even if an error "ladder program lost -- reload from floppy" (error code 93) occurred.



# 14 ERROR CODE LIST

## 14 ERROR CODE LIST

| Error Code (ERR) | Contents and Causes                                                                                                                                                                                                                                                                 | Measures                                                                                                  |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 01               | <u>Read after write error</u><br>. The PCs protect switch is set to on.<br>. Data was written into the OS protect area.                                                                                                                                                             | . Set the PCs protect switch to off.<br>(Data cannot be written into the OS protect area.)                |
| 02               | <u>Write error during PCs.RUN</u><br>. The RUN/STOP switch of the PCs is set to RUN.                                                                                                                                                                                                | . Set the PCs switch to "STOP".                                                                           |
| 03               | <u>Circuit hardware error at the time of direct connection</u><br>. PCs down<br>. Cable disconnection<br>. Error caused by noise                                                                                                                                                    | . Remove the source of the error, then retry again.                                                       |
| 04               | <u>Read after read error</u><br>. When the PCs was placed in the RUN state, the OS or the user program work area was read.<br>. Data was changed on the circuit.                                                                                                                    | . Execute the processing again. (When an error frequently occurs, check cables/noise and others.)         |
| 06               | <u>Circuit hardware error at the time of multi-connection</u><br>. The PSE link card down.<br>. The PSE link program is not loaded.<br>. Nonexisting PCs No. is specified.<br>. More than one PSE is accessed.<br>. PCs down.<br>. Cable disconnection.<br>. Error caused by noise. | . Check the PCs No.<br>. Set up the PSE link card again.<br>. Remove the source of the error, then retry. |
| 07               | The PSE is used in the local state.                                                                                                                                                                                                                                                 | Connect the PSE and PCs, then place them in the remote state.                                             |

## 14 ERROR CODE LIST

| Error Code<br>(ERR) | Contents and Causes                                                                        | Measures                                                                                                         |
|---------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 08                  | <u>Double reserve of the same PCs</u><br>. More than one PSE wrote data into the same PCs. | . Set the number of PSEs connecting to the PCs set to one, then activate the PSE.                                |
| 09                  | The address table value of the PCs is set to odd number address.                           | Reset the table. (Set the address value to even number.)                                                         |
| 0A                  | The table value of the PCs is incorrect.                                                   | Reset the table value.                                                                                           |
| 10                  | The OS of the PC is not loaded in the PCs.                                                 | Activate the PSE in the remote mode. The PCs will start loading the OS in it. Refer to PSE start up (Chapter 3). |
| 11                  | The PCs OS program stored in the system F/D is destroyed.                                  | Use another PSE system F/D.                                                                                      |
| 24                  | PCs address set error.                                                                     | Reset the PCs address.                                                                                           |
| 30                  | <u>Rational error</u><br>. Illegal type was entered.<br>. Illegal number was entered.      | Enter the correct instruction words.                                                                             |
| 31                  | <u>Program size error</u><br>• Insufficient area available for ladder program              | Reverse a vacant area.                                                                                           |
| 33                  | A parameter of the data manipulation in the circuit is destroyed.                          | Enter the correct parameter again.                                                                               |
| 36                  | Write error.                                                                               | Enter the correct instruction words from the keyboard.                                                           |

## 14 ERROR CODE LIST

| Error Code (ERR) | Contents and Causes                                                                                   | Measures                                                                    |
|------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 37               | <u>Finish block before moving forward</u><br>. Cursor cannot move forward                             | Make necessary additions or modifications before attempting to move cursor. |
| 38               | <u>Finish block before moving backward</u><br>. Cursor cannot move backward                           | Make necessary additions or modifications before attempting to move cursor. |
| 39               | <u>Deletion error</u><br>. The DEL key was pressed at the position where the deletion is not allowed. | Perform batch deletion, line deletion, or replacement.                      |
| 3A               | Program creation or modification was attempted in the B screen.                                       | Switch the screen to A, then create or modify the program.                  |
| 3B               | The MENU key was pressed while in screen B.                                                           | Switch the screen to A, then press the MENU key.                            |
| 41               | <u>Ladder circuit size error</u><br>The screen is full, and a program cannot be created.              | Reduce the circuit size.                                                    |
| 42               | <u>Instruction word rational error</u><br>. A branch which cannot be connected was entered.           | Enter the correct instruction words.                                        |
| 43               | <u>Coil address has already been used</u><br>. The output coil that was already used was entered.     | Enter a coil address that has been used.                                    |

## 14 ERROR CODE LIST

| Error Code (ERR) | Contents and Causes                                                                                                                             | Measures                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 44               | An instruction which is not permitted was entered, or an instruction was entered when the screen was full.                                      | Enter the correct instruction word again.                                                                      |
| 45               | Hardware abnormality when the T, U and C presets are entered.                                                                                   | Check cables, PCs RUN/STOP state, protection switch and others.                                                |
| 46               | The same coil or edge contact exists in the circuit being created or modified.                                                                  | Enter an unused instruction.                                                                                   |
| 48               | <u>Line deletion error</u><br>. The LINE DEL. key was pressed at the position where the line deletion was not allowed.                          | Move the cursor to the position where the line deletion is allowed.                                            |
| 49               | The first instruction of the circuit to be processed is destroyed.                                                                              | Correct the circuit on the screen.                                                                             |
| 51               | <u>Ladder program nonregistration</u><br>• Ladder program is not created.<br>• The N No. of a ladder program that does not exist was specified. | <ul style="list-style-type: none"> <li>• Create the ladder program.</li> <li>• Perform F/D loading.</li> </ul> |
| 52               | Line insertion is not allowed at the cursor position.                                                                                           | Move the cursor to the left common line, then insert the line.                                                 |
| 53               | No relevant instruction word exists.                                                                                                            | Enter the correct instruction word.                                                                            |
| 55               | An instruction word entered from the keyboard. Cannot replace existing instruction word.                                                        | Enter the correct instruction word.                                                                            |

## 14 ERROR CODE LIST

| Error Code (ERR) | Contents and Causes                                                                       | Measures                                                                      |
|------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 56               | <u>Instruction word rational error</u><br>• The first ladder circuit block is not found.  | Load the backup floppy.                                                       |
| 57               | <u>Instruction word rational error</u><br>• One ladder block size is 128 steps or more.   | Reduce the circuit size.                                                      |
| 58               | <u>Instruction word rational error</u><br>• Incorrect instruction is found.               | Correct the program, or load the backup floppy disk.                          |
| 59               | <u>Instruction word rational error</u><br>• Undefined instruction word is found.          | Correct the program, or load the backup floppy disk.                          |
| 60               | Since the circuit starts from the first line, the circuit cannot be completely displayed. | Correct the circuit so that the whole circuit can be displayed in one screen. |
| 61               | Circuit is destroyed. (No END instruction exists.)                                        | Load the program stored in the F/D.                                           |
| 62               | Circuit is destroyed. (No END instruction exists.)                                        | Load the program stored in the F/D.                                           |
| 80               | Circuit is destroyed. (No END instruction exists.)                                        | Load the program stored in the F/D.                                           |
| 81               | Incorrect data entry from the keyboard.                                                   | Enter the correct data.                                                       |

## 14 ERROR CODE LIST

| Error Code<br>(ERR) | Contents and Causes                                                                                           | Measures                                              |
|---------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| 82                  | Hardware circuit error                                                                                        | Check the PCs and cable states.                       |
| 83                  | Circuit is destroyed.<br>(The cross reference list cannot be displayed.)                                      | Load the program stored in the F/D.                   |
| 86                  | Incorrect key entry in the cross reference list processing                                                    | Press the correct key.                                |
| 87                  | Incorrect entry of instruction words                                                                          | Enter correct instruction words.                      |
| 93                  | The ladder program is destroyed. (End instruction is insufficient.)                                           | Load the program stored in the F/D.                   |
| A2                  | Warning indicating that the saved circuit for screen switching was deleted in another screen.                 | Switch the screen correctly.                          |
| A4                  | Incorrect instruction entry before and after the batch name change.                                           | Enter correct instruction again.                      |
| AA                  | <u>Error caused by PSE system type mismatch</u><br>. The PSE system in use is not matched with the PCs model. | . Use the PSE system floppy disk of the relevant PCs. |
| AB                  | The specified function is not provided by the relevant PCs.                                                   | Check the contents of data entered by the key.        |
| AC                  | <u>Warning for preset change during RUN</u><br>. PCs rewrites the preset of T, U and C during RUN.            | Preset is written normally.                           |

## 14 ERROR CODE LIST

| Error Code (ERR) | Contents and Causes                                                                                       | Measures                                                                                                                            |
|------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| AD               | In the screen switching, the lowest circuit is used for data manipulation.                                | Read out (create) another circuit to set the lowest circuit whose function is other than data manipulation, then switch the screen. |
| B1               | The relevant circuit could not be found.                                                                  | Check that the entry procedures are correct.                                                                                        |
| B3               | <u>Incorrect N No. entry</u> . The N No. assigned to mode other than S mode (i.e., C mode was specified.) | Specify the N No. assigned to the S mode.                                                                                           |
| B4               | The specified N No. exceeds a maximum value.                                                              | Enter correct N No. again.                                                                                                          |
| B5               | <u>Circuit monitor error</u> . Monitor was started without a circuit displayed.                           | Read the sequence circuit on the screen, then monitor the circuit.                                                                  |
| B7               | Attempt to set input/output data to a nonexistent instruction.                                            | Set the input/output data correctly.                                                                                                |
| B9               | Warning occurred when the RUN or STOP state is switched to SIMU.RUN during the dynamic monitor.           | Refer to chapter 7.                                                                                                                 |
| BA               | Since the circuit to be read out is destroyed, the circuit cannot be read out normally.                   | Display the relevant circuit by the sequential read, delete the circuit by the batch deletion, then create the circuit again.       |



## 14 ERROR CODE LIST

| Error Code<br>(ERR) | Contents and Causes                                                                                         | Measures                                                                                                                                                                                |
|---------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BF                  | LPET address is placed in the incorrect state.                                                              | Press the programming END key after setting the PCs to protect OFF and STOP.                                                                                                            |
| C3                  | <u>N No. copy processing error</u><br>. Memory capacity necessary for copy is insufficient.                 | Check the program.                                                                                                                                                                      |
| C5                  | <u>Hardware circuit error</u><br>. When the N No. is copied, a hardware circuit error occurred.             | Check whether the PCs is down or whether the circuit is disconnected.                                                                                                                   |
| CA                  | <u>Hardware circuit error</u><br>A hardware circuit error occurred when the N No. was deleted.              | Load the program saved in the floppy disk, then delete the N No.                                                                                                                        |
| CD                  | No sequence program is found in the N No. intended for subroutine processing.                               | Check the N No.                                                                                                                                                                         |
| D0                  | When the "CONTACT & COIL" were changed in the batch name change, an incorrect relay function was specified. | The "CONTACT & COIL" is changed only using the same relay function. Therefore, check the input data.                                                                                    |
| D1                  | An edge contact was to be changed to other type in the batch name change, and vice versa.                   | Check the old and new names.                                                                                                                                                            |
| D2                  | A coil (or edge contact) of the name (new name) applied to the batch name change already exist.             | Check the old and new names.                                                                                                                                                            |
| E0                  | The file name entered cannot be used.                                                                       | A file name must be given in alphanumeric characters and the first character of a name is limited to an alphabetic character. (Alphabetic characters must be given in capital letters.) |

## 14 ERROR CODE LIST

| Error Code<br>(ERR) | Contents and Causes                                                                                                                                                                                                                            | Measures                                                                                                                                                                                           |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E3                  | The entry number is out of range.                                                                                                                                                                                                              | Enter the No. within the range.                                                                                                                                                                    |
| E8                  | An incorrect PCs type of the comment file was specified.                                                                                                                                                                                       | Check the PCs type of the specified comment file.                                                                                                                                                  |
| E9                  | Communication with the printer is not functional.                                                                                                                                                                                              | Check whether the PSE and the printer are connected correctly or whether the printer is powered.                                                                                                   |
| EA                  | <u>Number of ladder circuit blocks overflow error</u><br>The amount of program is too large to print out.                                                                                                                                      | Print the ladder program through the HPC-6000-20 with CPMS or, if you use the current system, divide the program in allowable blocks and print them. (See 13.18.)                                  |
| F0                  | <u>Hardware error at the time of F/D read</u><br><ul style="list-style-type: none"> <li>• Floppy disk has scratches.</li> <li>• Floppy disk is not loaded.</li> <li>• Format is mismatched.</li> <li>• Malfunction caused by noise.</li> </ul> | <ul style="list-style-type: none"> <li>• Perform the F/D read again.</li> <li>• Replace the scratched floppy by a new floppy.</li> <li>• Separate the floppy disk unit from the system.</li> </ul> |
| F1                  | <u>File size over</u><br><ul style="list-style-type: none"> <li>• The size of a file to be created was larger than that of the available capacity of the floppy disk.</li> </ul>                                                               | <ul style="list-style-type: none"> <li>• Clear unnecessary files.</li> <li>• Load the file into another floppy disk.</li> </ul>                                                                    |
| F2                  | <u>Drive No. Selection Error</u><br><ul style="list-style-type: none"> <li>• The drive with the specified No. does not exist.</li> <li>• Formatting of the RAM disk was attempted.</li> </ul>                                                  | <ul style="list-style-type: none"> <li>• Check the drive No.</li> <li>• RAM disk may not be used in HPC-6000-05. Use HPC-6000-20.</li> </ul>                                                       |

## 14 ERROR CODE LIST

| Error Code<br>(ERR) | Contents and Causes                                                                                                                                                                                                 | Measures                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F3                  | <u>Hardware error at the time of F/D write</u> <ul style="list-style-type: none"> <li>. Floppy disk has scratches.</li> <li>. Malfunction caused by noise.</li> <li>. Floppy disk is not loaded.</li> </ul>         | <ul style="list-style-type: none"> <li>. Replace the scratched floppy disk by a new disk.</li> <li>. Separate the floppy disk from the system.</li> </ul>                                  |
| F4                  | <u>Incorrect file name entry</u> <ul style="list-style-type: none"> <li>. The specified file cannot be found</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>. Check whether the specified file exists by the "DIRECTORY" processing.</li> <li>. Enter the correct file name.</li> </ul>                         |
| F5                  | <u>F/D file type</u> <ul style="list-style-type: none"> <li>. PCs No. and PCs type of the specified file are mismatched.</li> </ul>                                                                                 | Check whether the PCs No. and PCs type of the specified file are correct.                                                                                                                  |
| F6                  | <u>Error caused by creating a file having the same name</u> <ul style="list-style-type: none"> <li>. The name of the file to be created was the same name of a file already existing on the floppy disk.</li> </ul> | <ul style="list-style-type: none"> <li>. Change the file name, then register it.</li> <li>. Erase the file having the same name.</li> <li>. Replace the floppy disk by another.</li> </ul> |
| FB                  | <u>Floppy disk media error</u> <ul style="list-style-type: none"> <li>. The floppy disk in use is non functional.</li> <li>. Data is destroyed due to magnetism, etc.</li> </ul>                                    | <ul style="list-style-type: none"> <li>. Retry again.</li> <li>. Replace the floppy disk by a new disk.</li> <li>. Use the backup data.</li> </ul>                                         |
| FD                  | <u>Write protect error</u> <ul style="list-style-type: none"> <li>. The floppy disk is protected.</li> </ul>                                                                                                        | <ul style="list-style-type: none"> <li>. Release the protection of the floppy disk.</li> <li>. Store data into another floppy disk.</li> </ul>                                             |
| FE                  | <u>F/D time-out error</u> <ul style="list-style-type: none"> <li>. Floppy disk is not loaded.</li> </ul>                                                                                                            | <ul style="list-style-type: none"> <li>. Make sure that the floppy disk is set.</li> </ul>                                                                                                 |

## 14 ERROR CODE LIST

---

| Error Code<br>(ERR) | Contents and Causes                                                                             | Measures                                                                                                                      |
|---------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| FF                  | <u>PCs/PSE system error</u><br>. The OS table of the PCs<br>is destroyed.<br>. PSE system error | . Check the system by<br>using another PCs.<br>. Check the system by<br>using another PSE.<br>. Initialize the PCs<br>memory. |

## ERRORS AT PSE START-UP

Change the system floppy disk when any of the errors shown below are displayed on the screen at PSE $\alpha$  power up.

If an error still occurs even after the disk has been changed, contact your nearest HITACHI service center serving your locality.

## Contents of Screen Display

- ▶ F/D READ ERROR FDCST=\*\* ST0=\*\* ST1=\*\* ST2=\*\* ST3=\*\*
- ▶ F/D SEEK ERROR FDCST=\*\* ST0=\*\* ST1=\*\* ST2=\*\* ST3=\*\*
- ▶ F/D FORMAT ERROR
- ▶ PROG.SIZE ERROR
- ▶ F/D RECAL ERROR FDCST=\*\* STP=\*\* ST1=\*\* ST2=\*\* ST3=\*\*
- ▶ MEMORY PTY ERROR RC= \*\*\*\*\*
- \* F/D NOT READY
- \* "F/D NOT READY" will be displayed if the operator keys in within one second of inserting the floppy disk. Wait a few seconds and then key in again.

# 14 ERROR CODE LIST

|   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| 0 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 0 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 1 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 1 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 2 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 2 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 3 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 3 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 4 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 4 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 5 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 5 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 6 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 6 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 7 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 7 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 8 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 8 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 9 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 9 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| A |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | A |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| B |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | B |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| C |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | C |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| D |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | D |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| E |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | E |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| F |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | F |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 0 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 0 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 1 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 1 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 2 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 2 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 3 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 3 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 4 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 4 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 5 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 5 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 6 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 6 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 7 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 7 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 8 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 8 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| 9 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | 9 |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| A |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | A |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| B |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | B |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| C |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | C |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| D |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | D |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| E |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | E |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
| F |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | F |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |

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