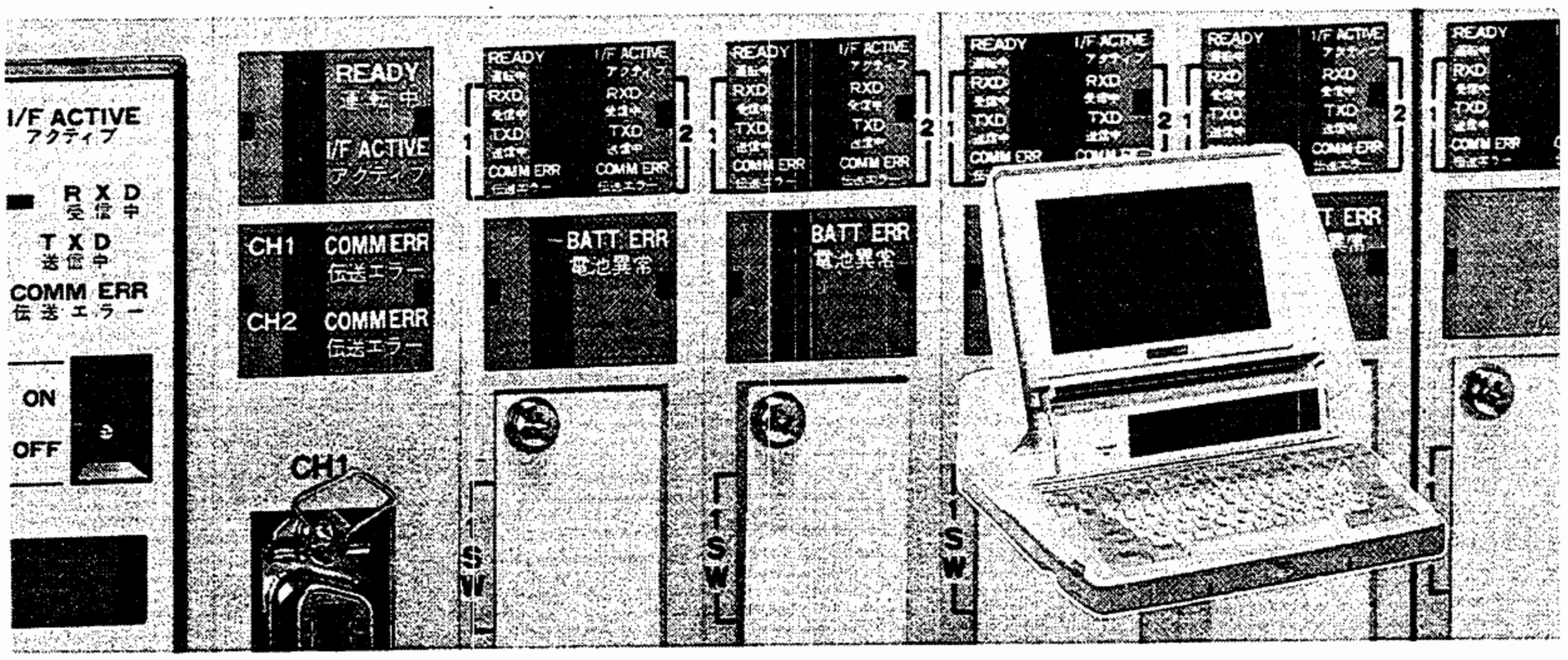
MEMOCON-SC U84,U84S

PROGRAMMABLE CONTROLLER

P150 PROGRAMMING PANEL

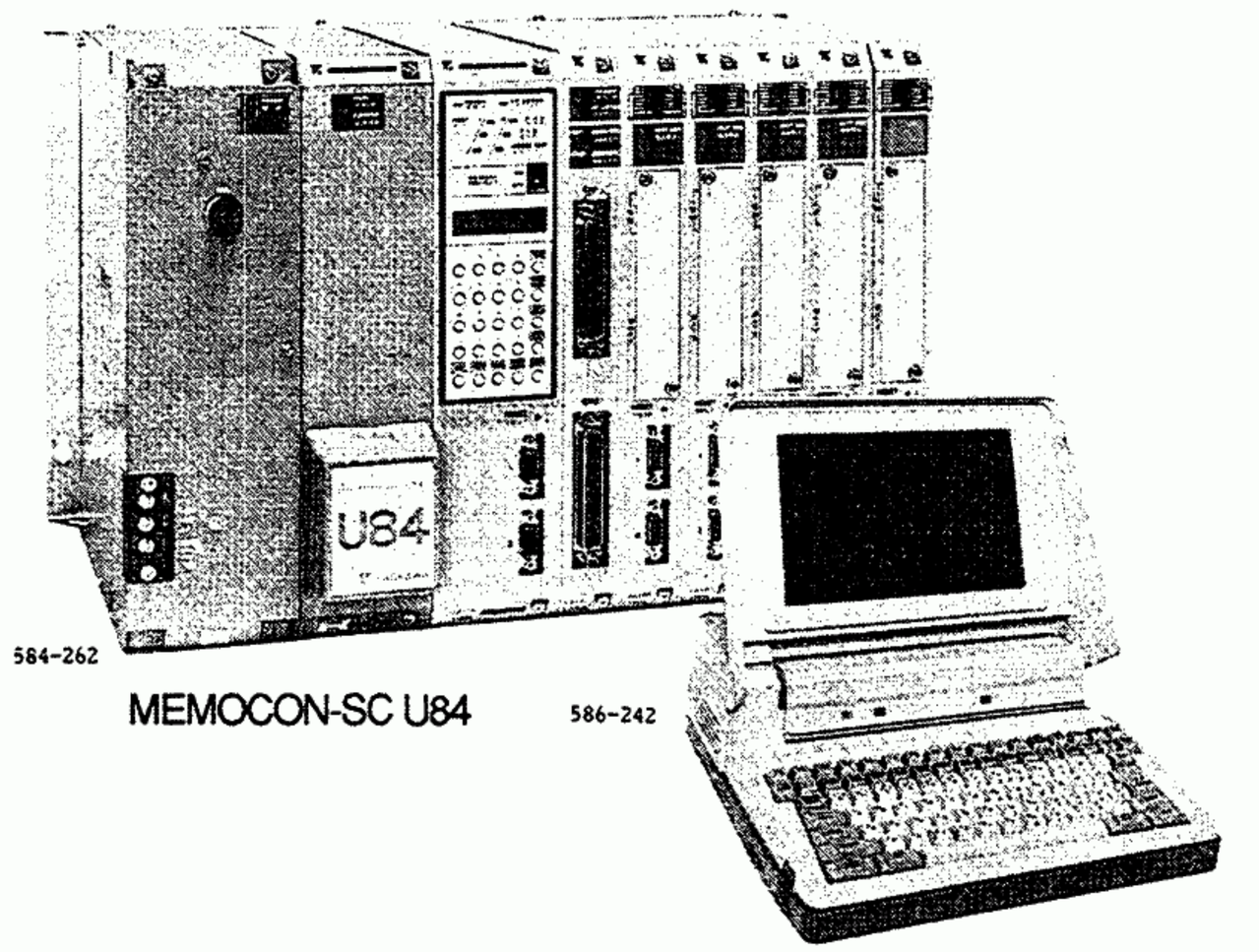


YASKAWA

This manual summarizes operation of the Yaskawa P150 programming panel. Although MEMOCON-SC U84 is used throughout this manual for system explanation, all the explanations also apply without any change to U84S, unless otherwise noted.

For the basic functions of U84 and U84S, refer to the following manual.

- MEMOCON-SC U84 User's Manual I
  Design and Maintenance (SIE-C815-10.1)
- MEMOCON-SC U84S User's Manual
  Design and Maintenance (SIE-C815-12.1)



584-262

MEMOCON-SC U84

586-242

P150 Programming Panel

CONTENTS

INDEX

1. INTRODUCTION

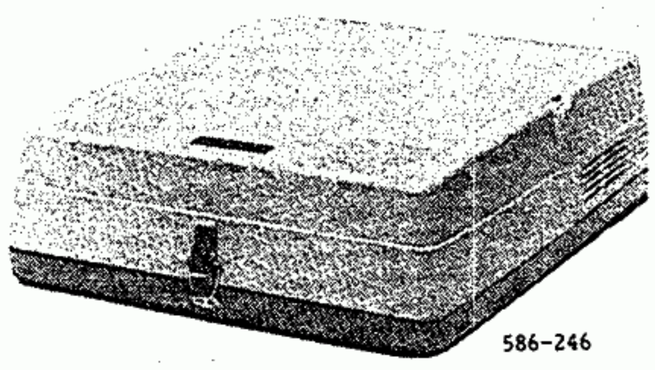
The P150 programming panel is a high-performance portable programming panel incorporating a high-performance microprocessor (using MS-DOS* V2.11 for OS†), and is applicable to all the programmable controllers in the MEMOCON-SC series.

The P150 is a user-friendly man-machine interface featuring a large easy-to-read plasma display and two large capacity 3.5-inch floppy disk drives, using various system disks.

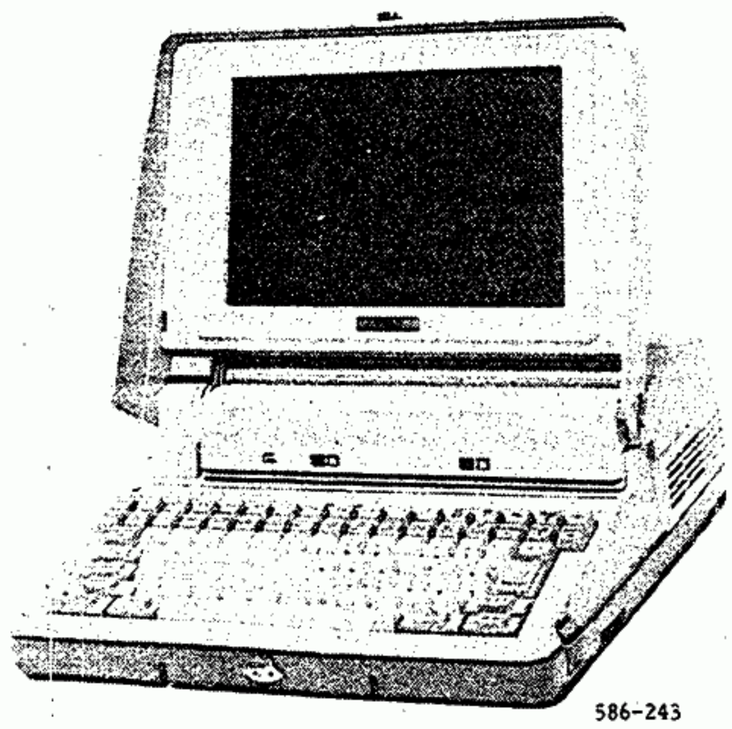
2. P150 CONSTRUCTION

2. 1 P150 CONSTRUCTION

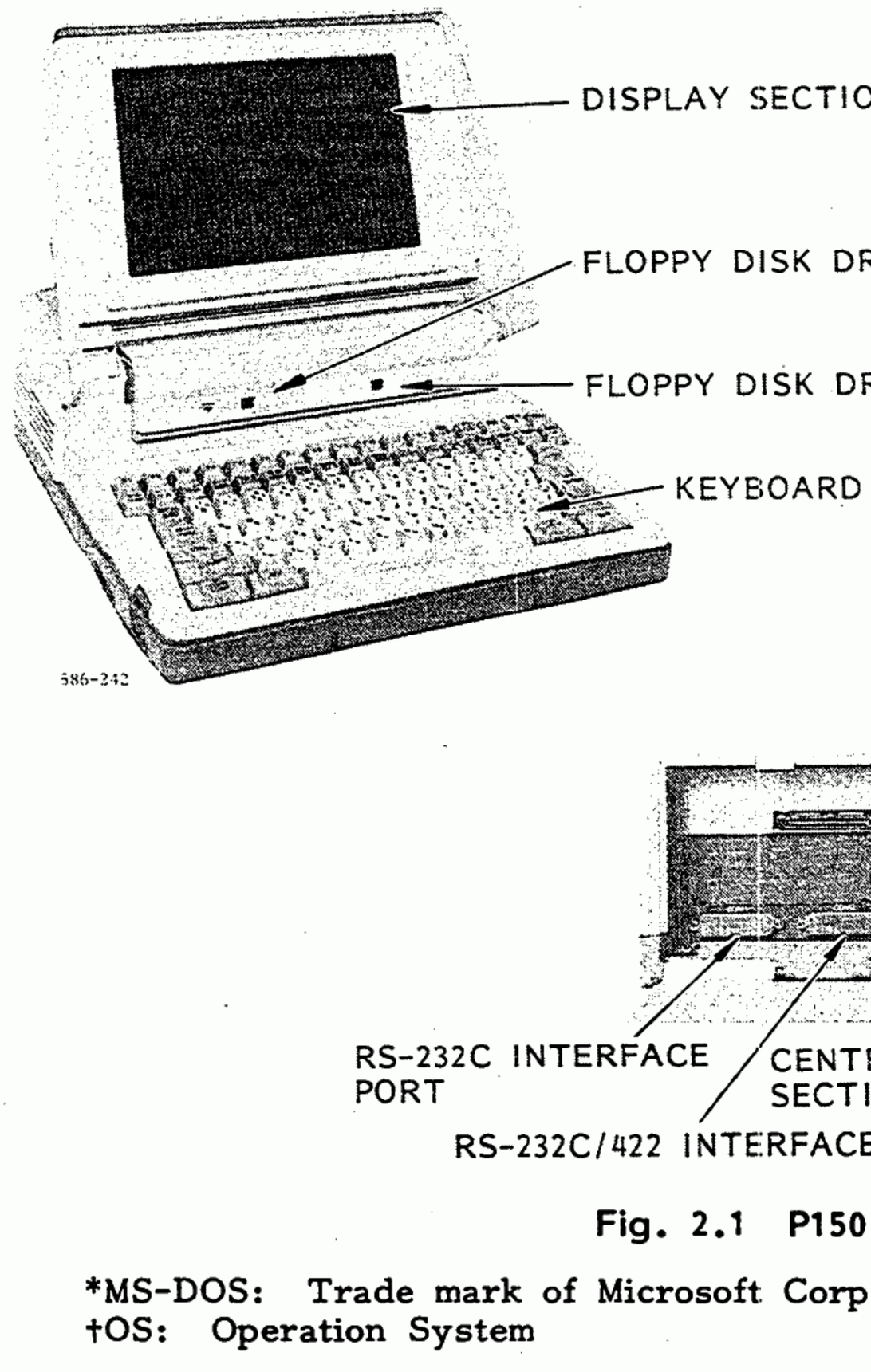
(1) With Display Section Closed



(2) With Display Section Open



(3) Front View



(4) Rear View

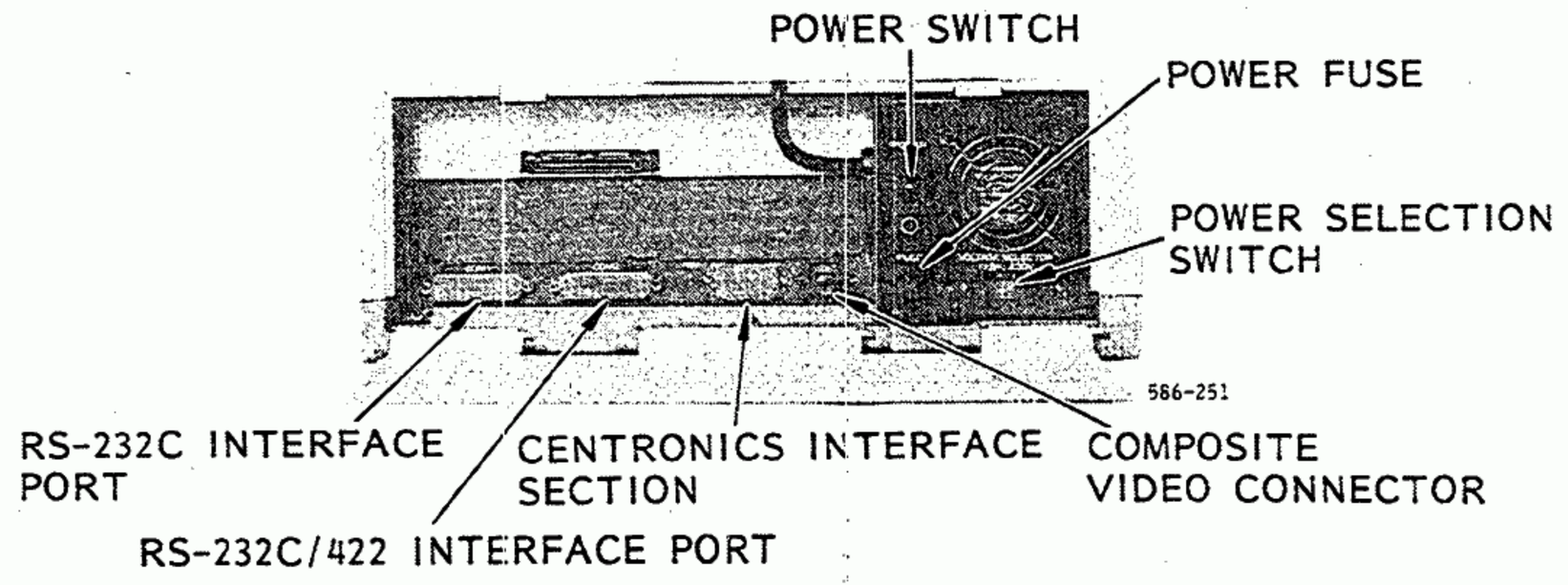
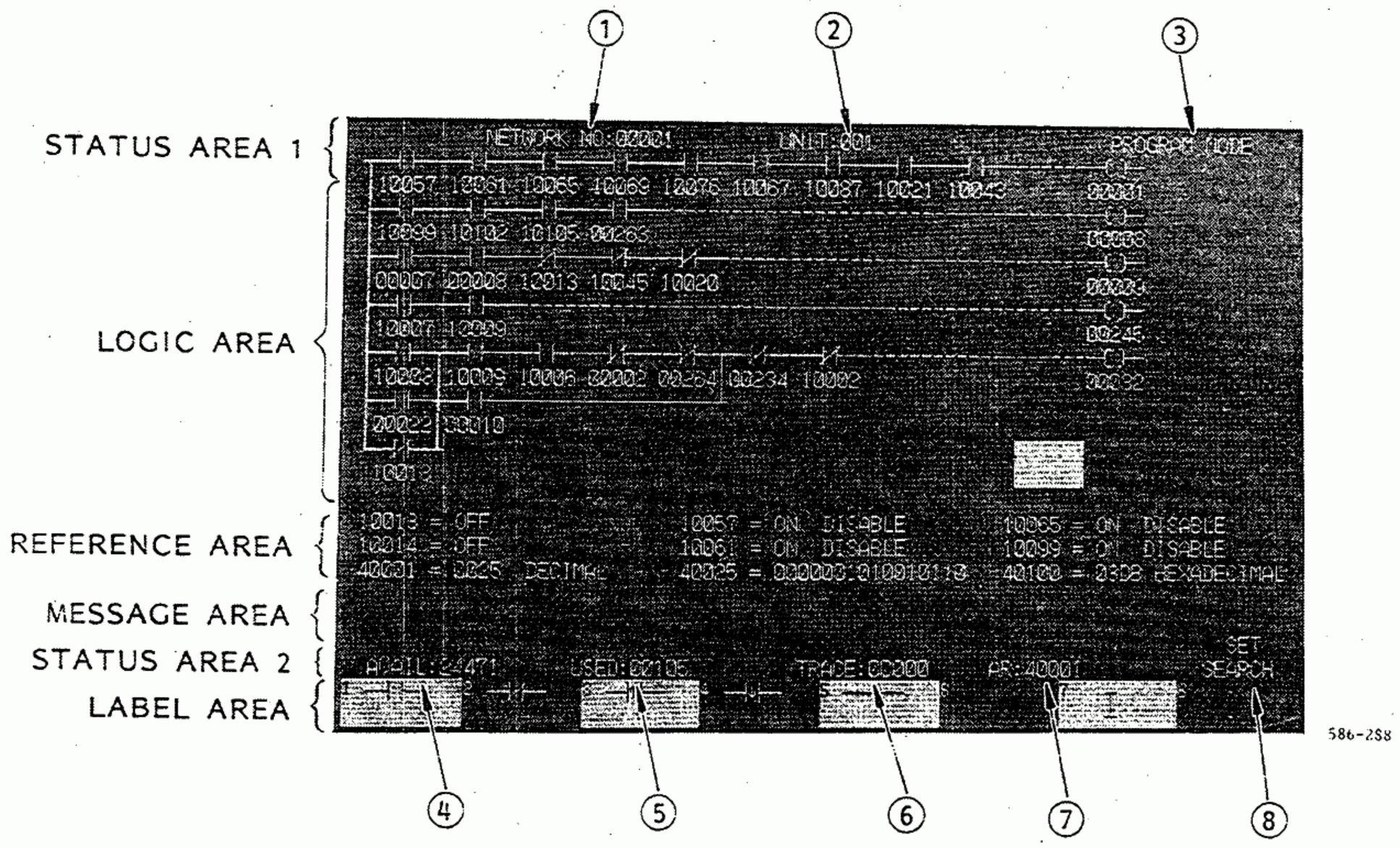


Fig. 2.1 P150 Construction

*MS-DOS: Trade mark of Microsoft Corp.
†OS: Operation System

2. 2 DISPLAY SCREEN



586-288

Fig. 2.2 Display Screen

(1) LOGIC AREA

Displays network stored in U84 memory. One specified network will be diplayed.

(2) REFERENCE AREA

Displays the status of discrete signal (coil and input relay) and contents of register in U84. Up to 9 (3 lines × 3 colums) status and contents are displayed.

By replacing the logic area with the expanding reference area, display of 42 max (14 lines × 3 colums) status and contents is added, and a total of 51 (17 line × 3 colums) is available.

(3) MESSAGE AREA

Various messages for giving instructions to the operator and to indicate the operating state of P150, and various error messages are displayed here.

(4) LABEL AREA

The functions of the variable function keys [F1] through [F8] at the top of the keyboard are displayed here.

(5) STATUS AREA

Displays the following 8 types of data.

① NETWORK NO: □□□□□
The number of the network currently displayed.

② UNIT: □□□
The unit number of the attached U84.

③ □□□□ MODE
The operation mode.

④ AVAIL: □□□□□
The total number of words of memory which have not been used and are still available.

⑤ USED: □□□□□
The total number of words of memory which have been used.

⑥ TRACE: □□□□
The number of networks currently in the trace stack.

⑦ AR: □□□□□
The contents of the assembly register (AR) storing the values set by the keyboard are displayed.

⑧ SET SEARCH
The cursor is positioned in this section of the screen when search parameters are to be set.

2. 3 KEYBOARD

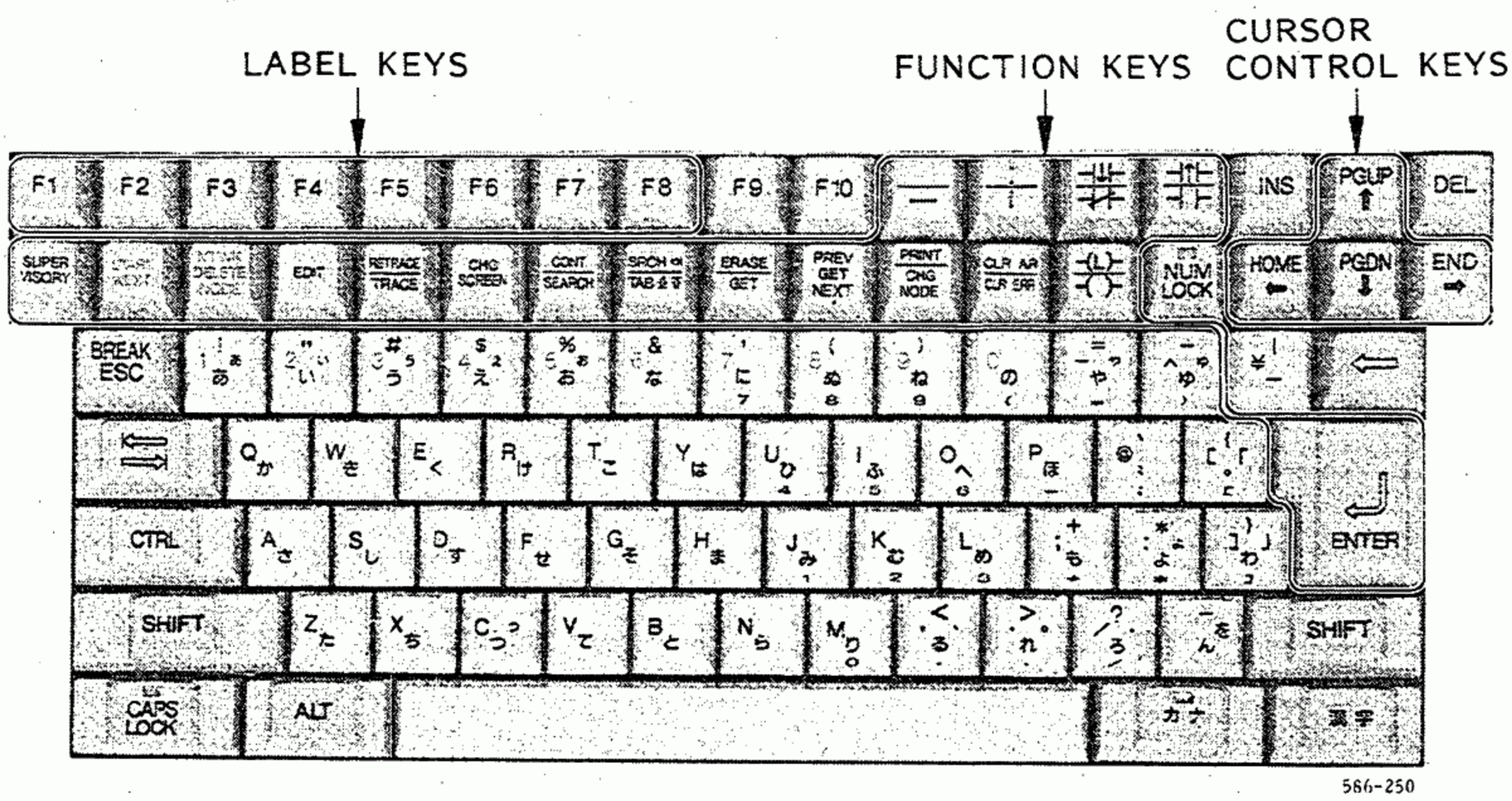


Fig. 2.3 Keyboard

(1) Cursor control keys

PGUP ↑	The cursor is shifted one position upward when this key is depressed.
PGDN ↓	The cursor is shifted one position downward when this key is depressed.
HOME ←	The cursor is shifted one position leftward when this key is depressed.
END →	The cursor is shifted one position rightward when this key is depressed.

While these keys are kept depressed, the cursor continuously moves.

(2) Variable function keys

F1 to F8	The functions of these eight keys are defined by the program, and are indicated by the labels in the display.
F9 and F10	These two keys are not used.

(3) Function Keys

Table 2.1 Function List of Function Keys

Key Designation	Function
SUPER VISORY	In the write-in mode and monitor mode, depressing this key calls up the display for the supervisory functions (e.g., U84 stop, start).
START NEXT	This key is used to start a new network. The network is automatically inserted after the network in the logic area previously on display. The power line at left side and the cursor are displayed on the screen to start a new network.
NTWK DELETE NODE	When this key is depressed the node (element) and vertical shunt, it present, at the cursor are deleted from user logic and from the screen.
SHIFT + NTWK DELETE NODE	When these keys are depressed simultaneously, the network shown in logic area is deleted from user logic. The next network in sequence will automatically be displayed. If the deleted network was the last in memory, the display screen will display a message to this effect.
EDIT	Depressing this key enables the network edit functions, e.g. network expansion, compression in horizontal and vertical directions, network displacement and network copying.
RETRACE / TRACE	When the cursor is on a relay contact referencing a coil, the trace function causes the network that drives the referenced coil to be displayed. To access the trace function, depress this key.
SHIFT + RETRACE / TRACE	The retrace function allows the user to return to the network that was displayed prior to performing a trace. To access the retrace function, depress these keys.
CONT / SEARCH	Depressing this key causes the panel to display the first network containing the complete or partial node specified in the search parameters. This key must be depressed after each network is displayed in order to continue the search.
SHIFT + CONT / SEARCH	Depressing these keys simultaneously causes the panel to display the next network, continuing the search. These keys must be depressed after each network is displayed in order to continue the search.
SRCH⇨ / TAB⇩⇧	Depressing this key moves the cursor to other areas (logic area ⟷ reference area). It also moves the cursor from the search data area to the logic area.
SHIFT + SRCH⇨ / TAB⇩⇧	Depressing these keys moves the cursor to the search data area.
ERASE / GET	Depressing this key with a network number or a reference number set in advance in AR displays the follows: · Specified network (when the cursor is in the logic area) · Reference number (when the cursor is in the reference area)
SHIFT + ERASE / GET	The network or reference indicated by the cursor will be erased from the screen when these keys are depressed simultaneously. The ERASE function affects the P150 panel screen only; it does not affect the memory of the attached controller.

Table 2.1 Function List of Function Keys (Cont'd)

Key Designation	Function
PREV GET NEXT	The network or reference following the one currently displayed on the screen is displayed by depressing this key.
SHIFT + PREV GET NEXT	The network or reference before the one currently displayed on the screen is displayed by depressing these keys simultaneously.
PRINT / CHG NODE	This key is used when writing and altering networks, and when setting search data. Depressing this key changes the label area display to the function group select display.
SHIFT + PRINT / CHG NODE	Depressing these keys simultaneously produces a hard copy of the current display. (A specified printer should be connected to the parallel port.)
CLR AR / CLR ERR	Depressing this key deletes the error message displayed in the message area. Whenever an error message is displayed, first depress this key before executing the correct operations.
SHIFT + CLR AR / CLR ERR	Depressing these keys simultaneously clears the assembly register (AR) to 0. These keys can also erase error messages related to the AR.
ENTER	While the cursor is in the logic area, this key is used to store the AR content as the reference No. or the operand for the element indicated by the cursor. If nothing is in the cursor position, an element type and a vertical shunt (if any) must be specified beforehand. When the cursor is located at a hold register No. in the reference area, this key is used to store the AR content in that hold register.
*	Selects ⊣ ⊢ (NO contact) of relays.
SHIFT + *	Selects ⊣↑⊢ (transitional contact OFF to ON) of relays.
*	Selects ⊣/⊢ (NC contact) of relays.
SHIFT + *	Selects ⊣↓⊢ (transitional contact ON to OFF) of relays.
*	Selects −( )− (coil) of coil.
SHIFT + *	Selects −(L)− (latch coil) of coil.
*	Selects vertical short ⁞.
SHIFT + *	Selects vertical open ⋮ (vertical short clear).
*	Selects horizontal short •—•. For horizontal short clear, use NTWK DELETE NODE key.

*The U84 programmer disk (Model: FU84-001) provides the same function keys as the above. Any key of the same function can be used.

(4) ASCII keys

These keys are used to input numerals, alphabet, codes and other ASCII characters, when inputting numerical data, file name, etc. These keys are operational while the カナ key is unlocked. While the カナ key is locked KATAKANA is input.

(5) Special keys

CAPS LOCK

CAPITAL LOCK KEY

When this key is depressed and locked, all the alphabet keying afterward is made in capital letters. Depressing it again unlocks it.

カナ

KANA KEY

When this key is depressed and locked, all the alphabet keying afterward are converted into KANA. Depressing it again unlocks it.

SHIFT

SHIFT KEY

This key is depressed when the characters in the shift positions of all the keys are to be input. The two shift keys have identical function.

⇦

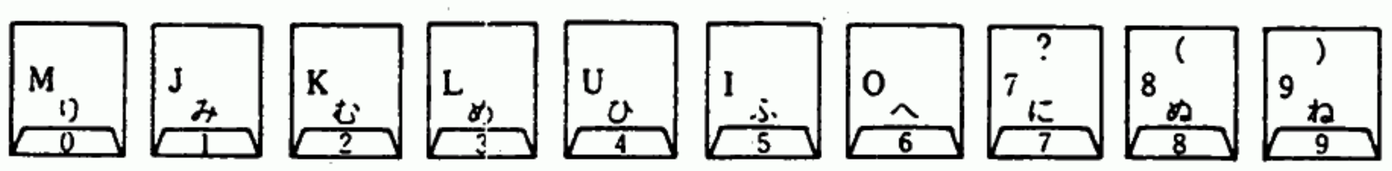
BACK SPACE KEY

This key is used to correct on input character.

NUM LOCK

NUMBER LOCK KEY

When this key is depressed and locked, all the keys shown below serve as digit keys.

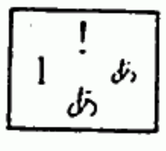


When it is locked, other keys (0 , P , etc.) are used to input the symbols ["(," "-," etc.]. Note that while this key is locked, the shift key is disable.

2. 3 KEYBOARD (Cont'd)

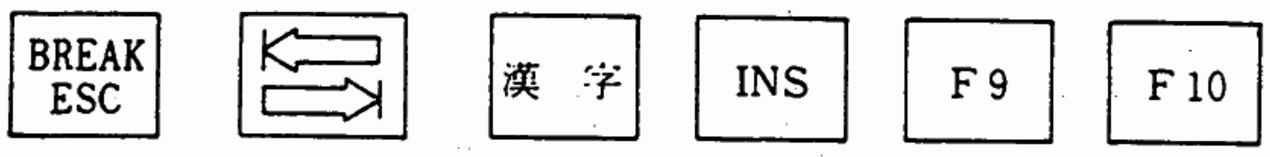
NOTE

(1) Example of keying



- To input "1" at the middle left, simply depress this key.
- To input "!" at the top, depress this key while depressing SHIFT key.
- To input "ア" at the bottom, depress カナ key, and then depress this key.
- To input "ア" at the middle right, depress カナ key, and then, depress the SHIFT key and this key simultaneously.

(2) Unused keys



(3) HIRAGANA and KATAKANA

Although the keys are labeled with HIRAGANA, actually KATAKANA is input. No HIRAGANA can be input.

3. P150 SPECIFICATION

3. 1 BASIC SPECIFICATION

Table 3.1 Basic Specifications

Item	Specifications
Power Supply*	85 to 132 VAC/195 to 265 VAC (Selectable), single phase, at 47.5 to 63 Hz.
Dissipated Power*	120 VA
Ambient Temperature†	+5 to +45°C
Storage Temperature†	-20 to +60°C
Humidity*	20 to 80% RH (non-condensing)
Atmosphere*	No inflammable or corrosive gases or no excessive dust.
Grounding*	Grounded via U84 ground line with specified communication cable.
Dielectric Strength†	1500 VAC for 1 minute
Insulation Resistance†	50 MΩ min at 500 VDC

*Data measured with disk inserted in P150.
†Data measured with no disk inserted in P150.

3. 2 PERFORMANCE SPECIFICATION

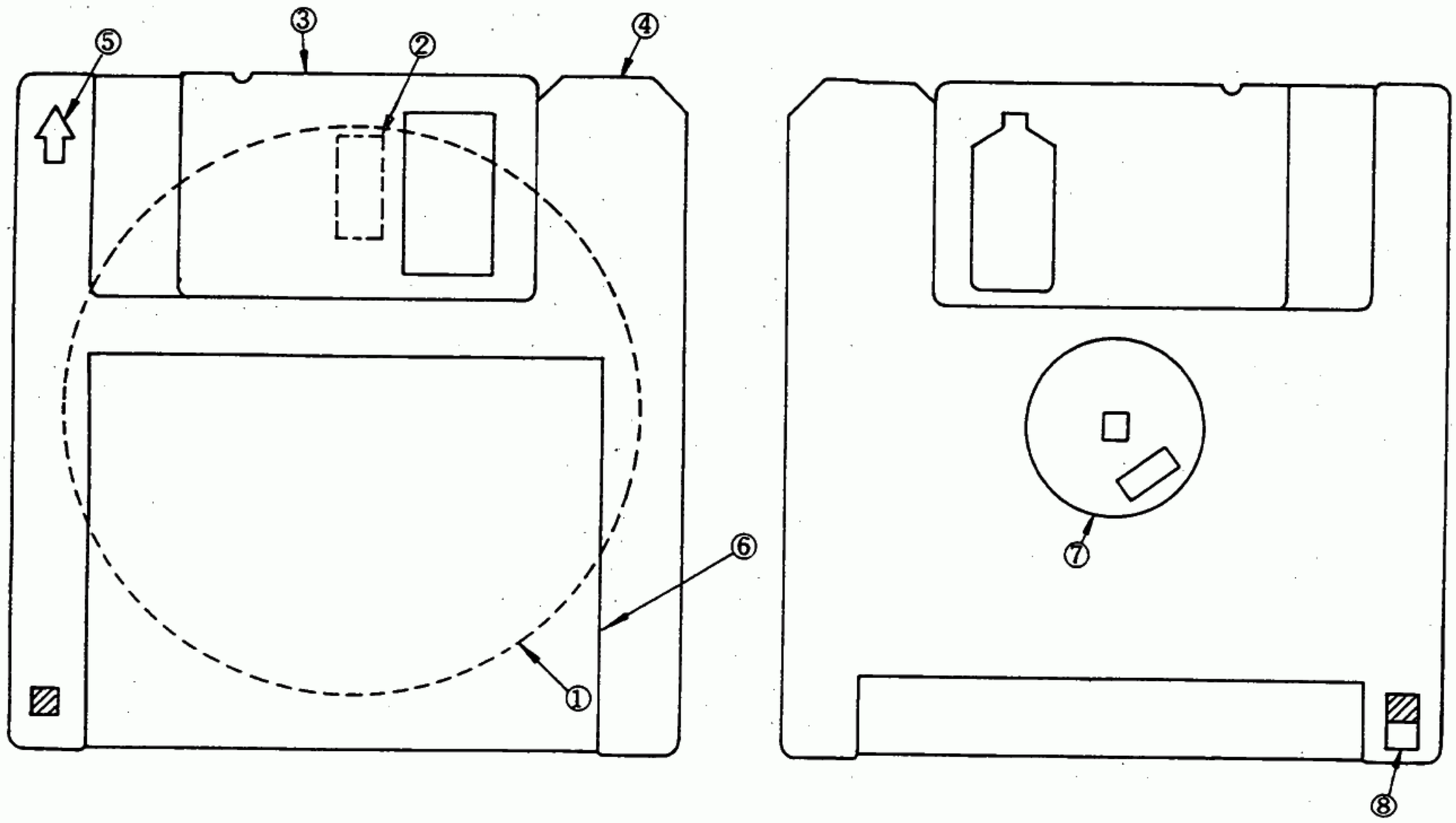
Table 3.2 Performance Specifications

Item		Specifications
Type		DISCT-P150-10
CPU		IAPX 186 (8 M Hz)
ROM		16 k bytes (bootstrap and diagnostic)
Display Screen		Plazma display, orange, size 230 × 144 mm
Display Capability	Text Display	AN*: 25 lines × 80 words
	Dot Matrix	AN*: 8 × 16 dots (25 lines)
	Character Attribute	Reverse, blink, under line, blind
	Graphic Display	640 × 400 dots
Keyboard		94 keys, sculpture type
Floppy Disk Drive		Built-in two 3.5-inch floppy disks (double sided, double density: 2DD type)
Serial Interface		One RS-232C and one RS-232C/422 port
Parallel Interface		A Centronics spec port
Composite Video Signal Interface		For connection of external CRT
Calender watch		Battery back-up
OS†		MS-DOS‡ V 2.11
Dimensions in mm		348 (W) × 121 (H) × 435 (D)
Approx Weight		9 kg

*AN: Alpha-numeric
†OS: Operation System
‡MS-DOS: Trade mark of Microsoft Corp.

3. 3 SPECIFICATION OF FLOPPY DISK DRIVE

① Parts Name of Floppy Disk



① DISK

② HEAD WINDOW

③ SHUTTER

④ CARTRIDGE

⑤ INSERTING DIRECTION

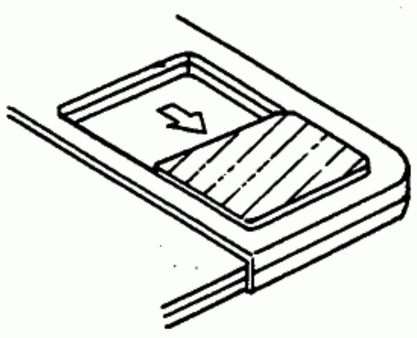
⑥ LABEL

⑦ METAL HUB

⑧ PROTECT SWITCH*

*Protect Switch Usage

(a) Write Disable



(b) Write Enable

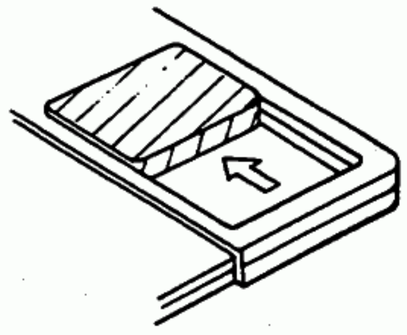


Fig. 3.1 Parts Name of Floppy Disk

② Handling Floppy Disks (2DD Type)

- Don't open the shutter and touch the disk surface by hand.
- Don't bring the disk close to a motor, transformer or other source of strong magnetic fields.
- Don't bring alcohol, thinner, beverages, etc. into contact with the disk.
- Don't place heavy objects on the disk.
- Don't bend or fold the disk.
- Don't expose the disk to direct sunlight or heat.
- Be sure the disk is fully inserted.
- To protect the files (avoiding damage and magnetization), remove the disk from the drive after use and store it in the case in the specified storage area.

Table 3.4 Applicable Floppy Disk for P150

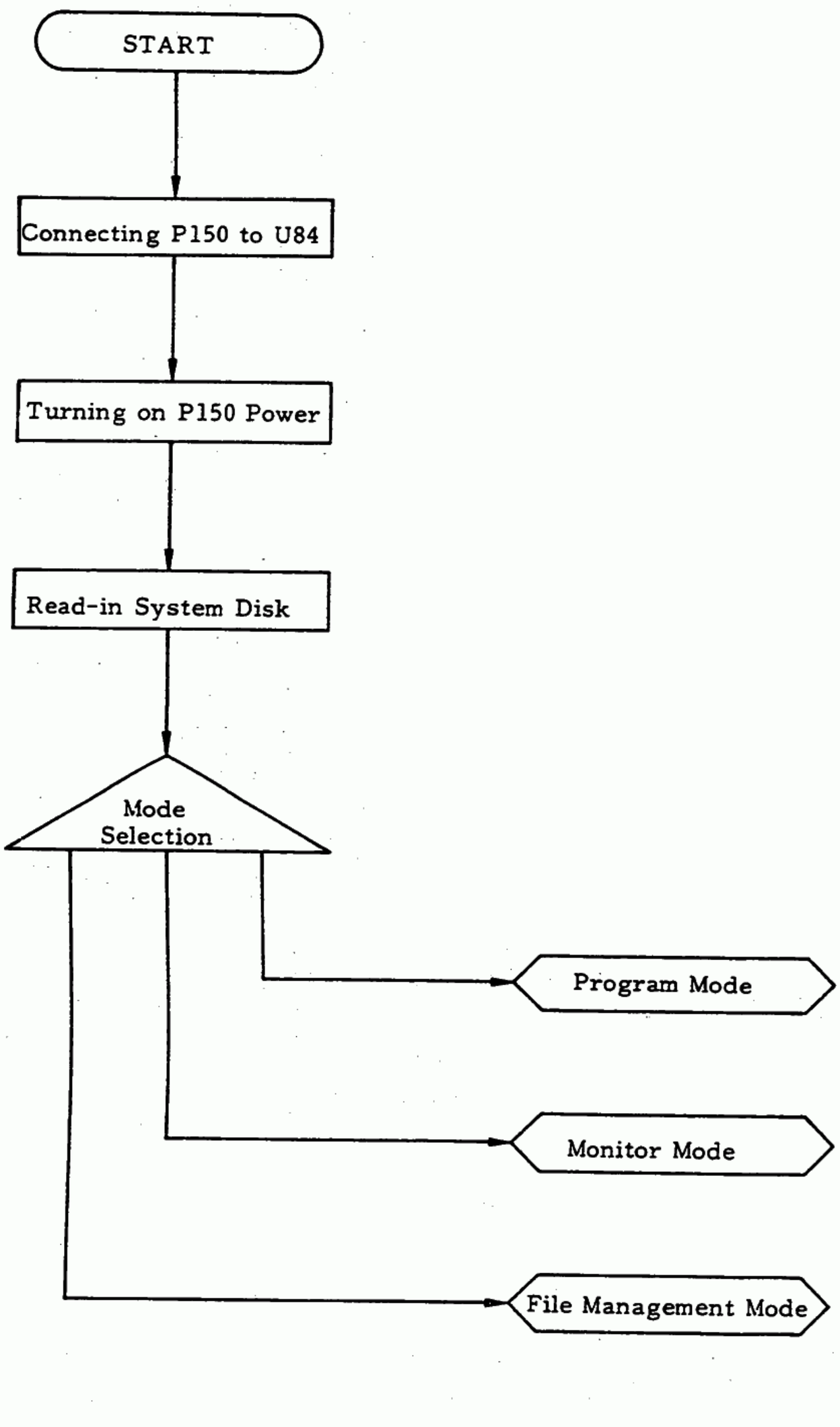
Model	Name	Function and Application
FU84-E001	U84 programmer	U84 I/O allocation; program storing, altering, monitoring, loading, dumping, verifying, etc.
FU84-E002	U84 ladder lister	Printing out of ladder diagram for U84 by using printer
FU84-E003	ASCII programmer	ASCII message (format data) storing, altering, etc. for ASCII module.
F150-E002	MEMOLINK programmer	I/O allocation, I/O state monitoring, etc. for memolink module.
F150-000	Blank disk	Blank disk for saving U84 program, formulated (initialized).

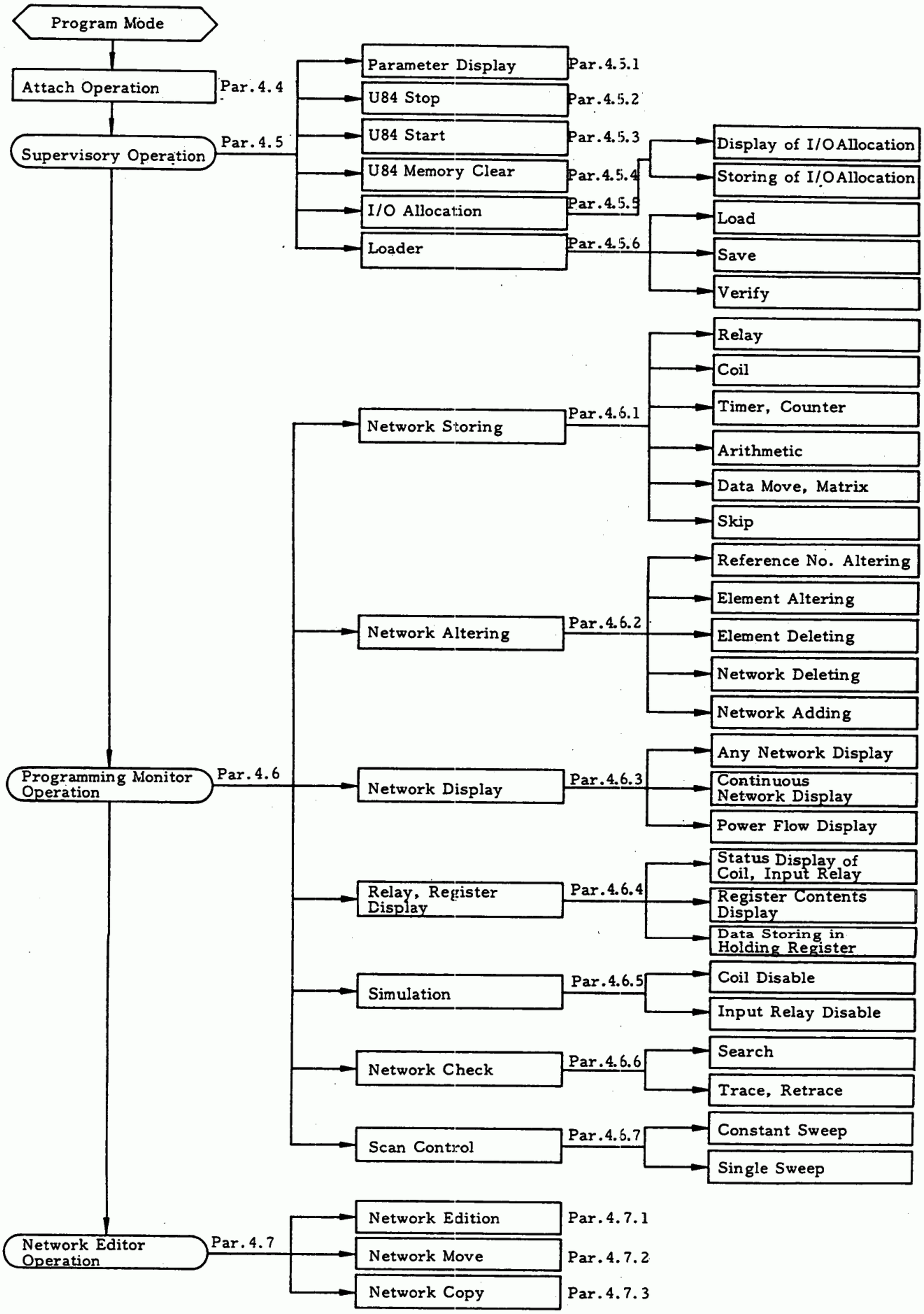
NOTE

All the above disks for U84 are also usable with U84S.
The displays on P150 show "U84" even when U84S is used.

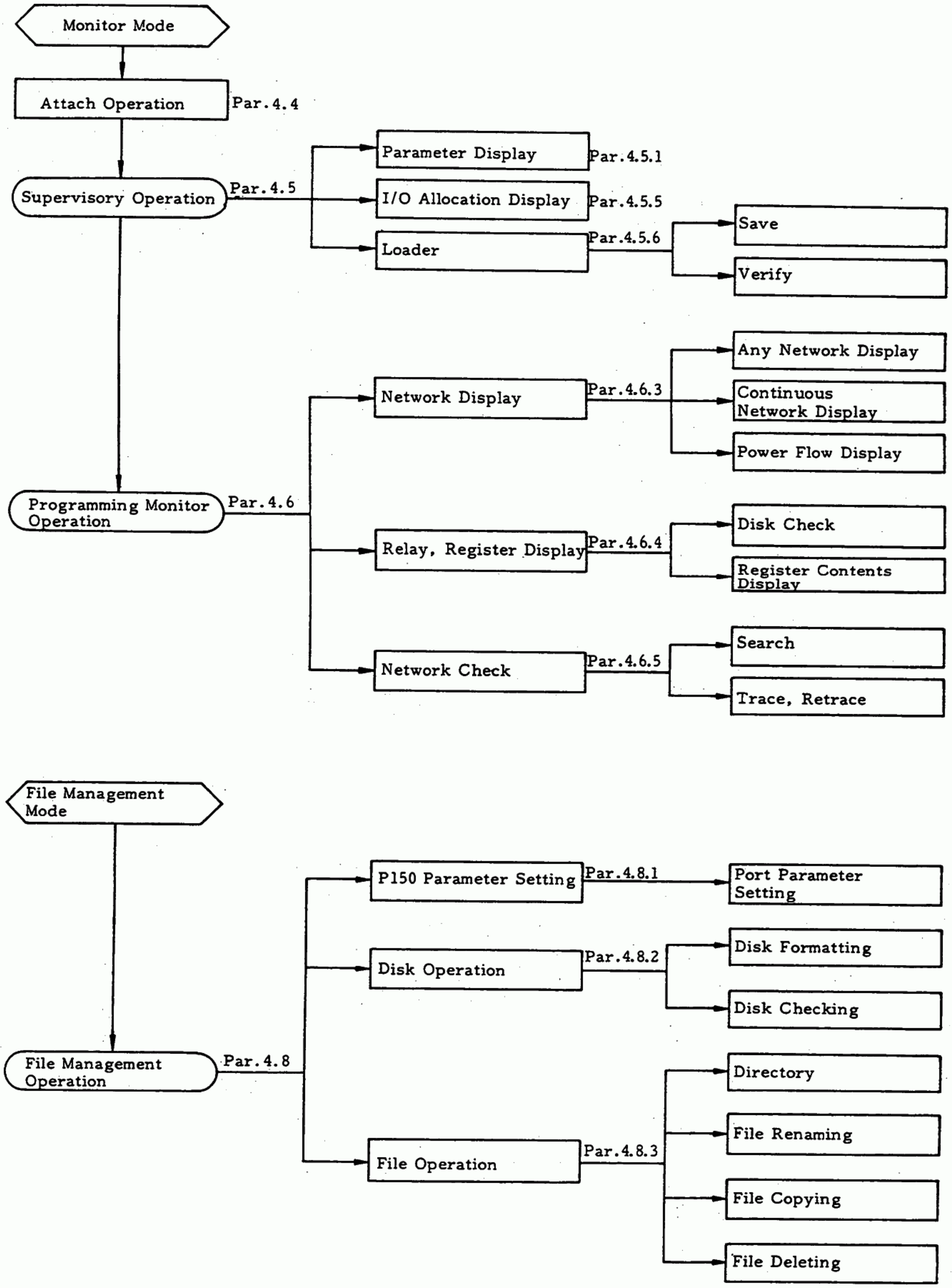
4. PROGRAMMING

4. 1 PROGRAMMING TREE




Program Mode
Attach Operation
Par.4.4
Supervisory Operation
Par.4.5
Parameter Display
Par.4.5.1
U84 Stop
Par.4.5.2
U84 Start
Par.4.5.3
U84 Memory Clear
Par.4.5.4
I/O Allocation
Par.4.5.5
Loader
Par.4.5.6
Display of I/O Allocation
Storing of I/O Allocation
Load
Save
Verify
Programming Monitor Operation
Par.4.6
Network Storing
Par.4.6.1
Relay
Coil
Timer, Counter
Arithmetic
Data Move, Matrix
Skip
Network Altering
Par.4.6.2
Reference No. Altering
Element Altering
Element Deleting
Network Deleting
Network Adding
Network Display
Par.4.6.3
Any Network Display
Continuous Network Display
Power Flow Display
Relay, Register Display
Par.4.6.4
Status Display of Coil, Input Relay
Register Contents Display
Data Storing in Holding Register
Simulation
Par.4.6.5
Coil Disable
Input Relay Disable
Network Check
Par.4.6.6
Search
Trace, Retrace
Scan Control
Par.4.6.7
Constant Sweep
Single Sweep
Network Editor Operation
Par.4.7
Network Edition
Par.4.7.1
Network Move
Par.4.7.2
Network Copy
Par.4.7.3

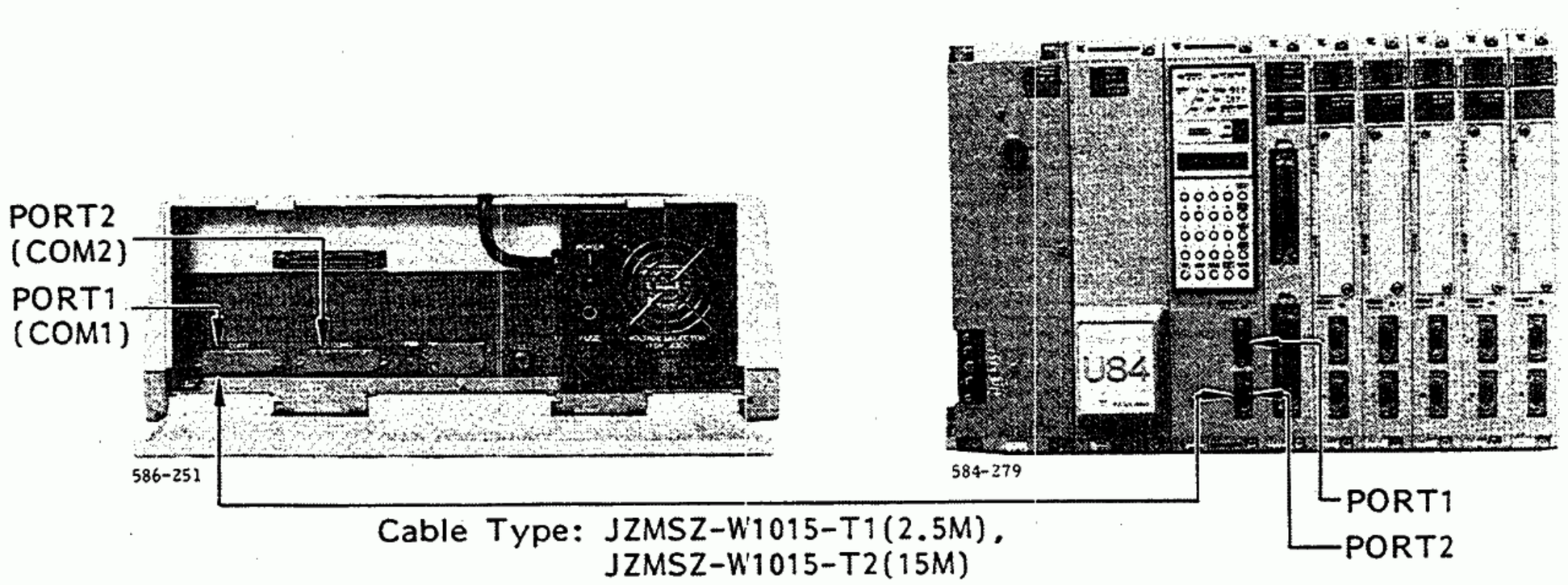
4. 1 PROGRAMMING TREE (Cont'd)



4. 2 PREPARATION

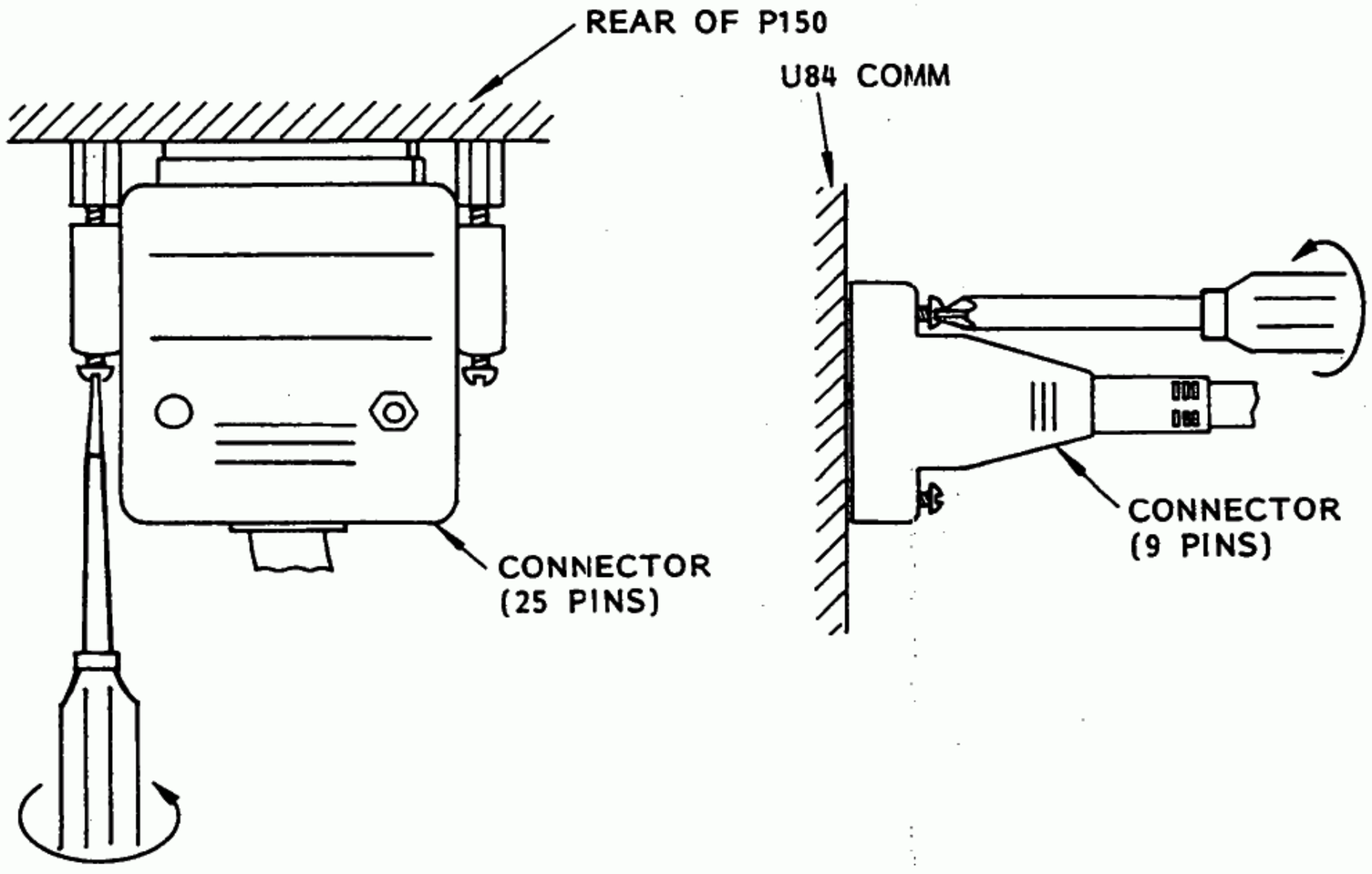
4.2.1 CONNECTING P150 TO U84

- Connect PORT 1 (COM 1) of P150 to PORT 1 or PORT 2 of U84 Communication module (COMM) using a cable.



POINT

Be sure to turn off the power supply to P150 before connecting or disconnecting the cable.



Note: Fix a connector with setscrews so that cable is not dislocated.

Fig. 4.1 Connection of P150 and U84

4.2.2 U84 PORT PARAMETER SETTING

- The procedure for setting the transmission parameters for exchange communications with the host computer, P150 etc. by connecting the U84 communication module is described here.
- The U84 communication module is initialized at the factory before shipment to allow both PORT 1 and PORT 2 to be connected unconditionally with P150, making setting correction unnecessary. However, be sure to check for correct setting.
- Without depressing [ENTR] key, the contents cannot be changed.

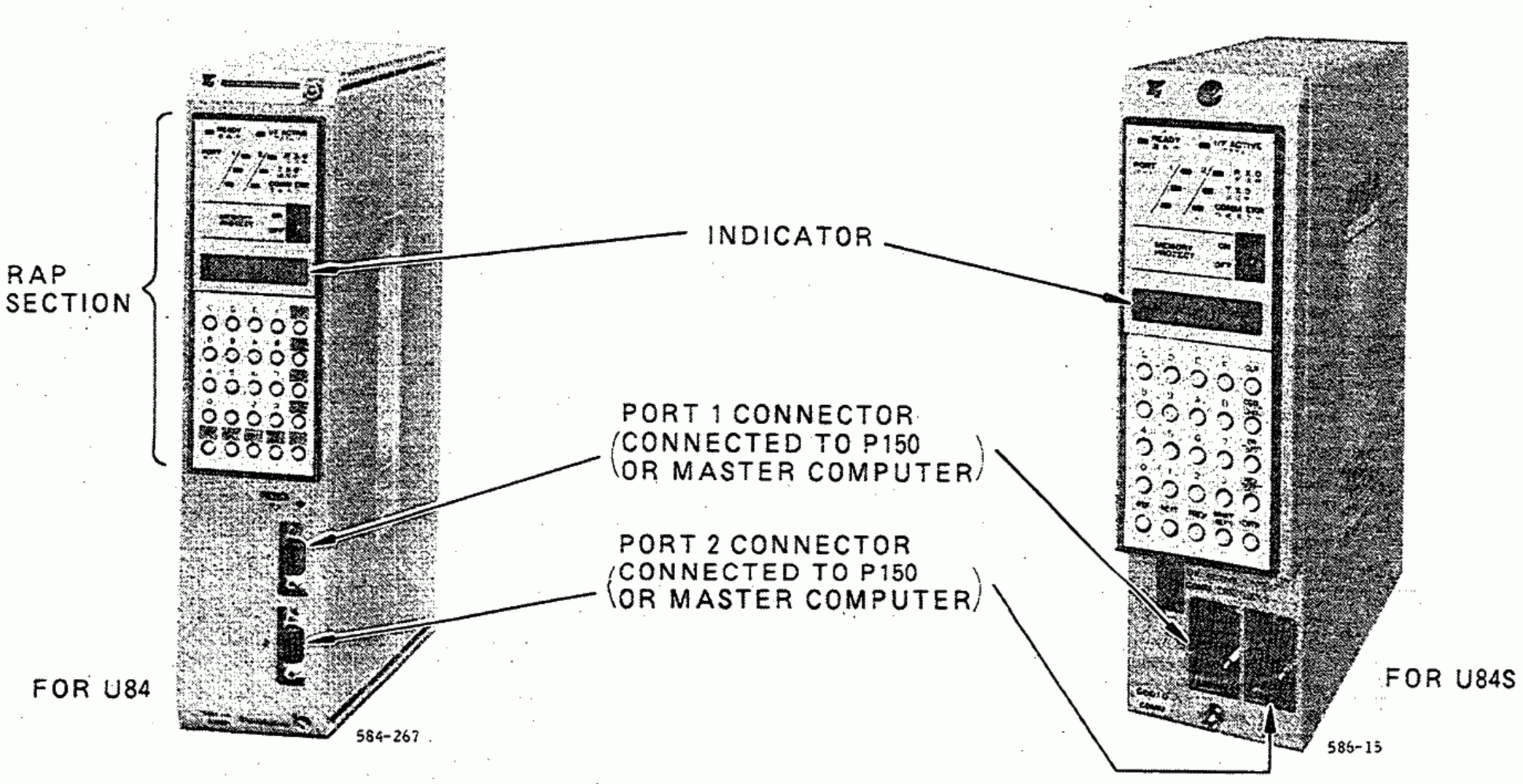


Fig. 4.2 Layout on Front Panel of Communication Module

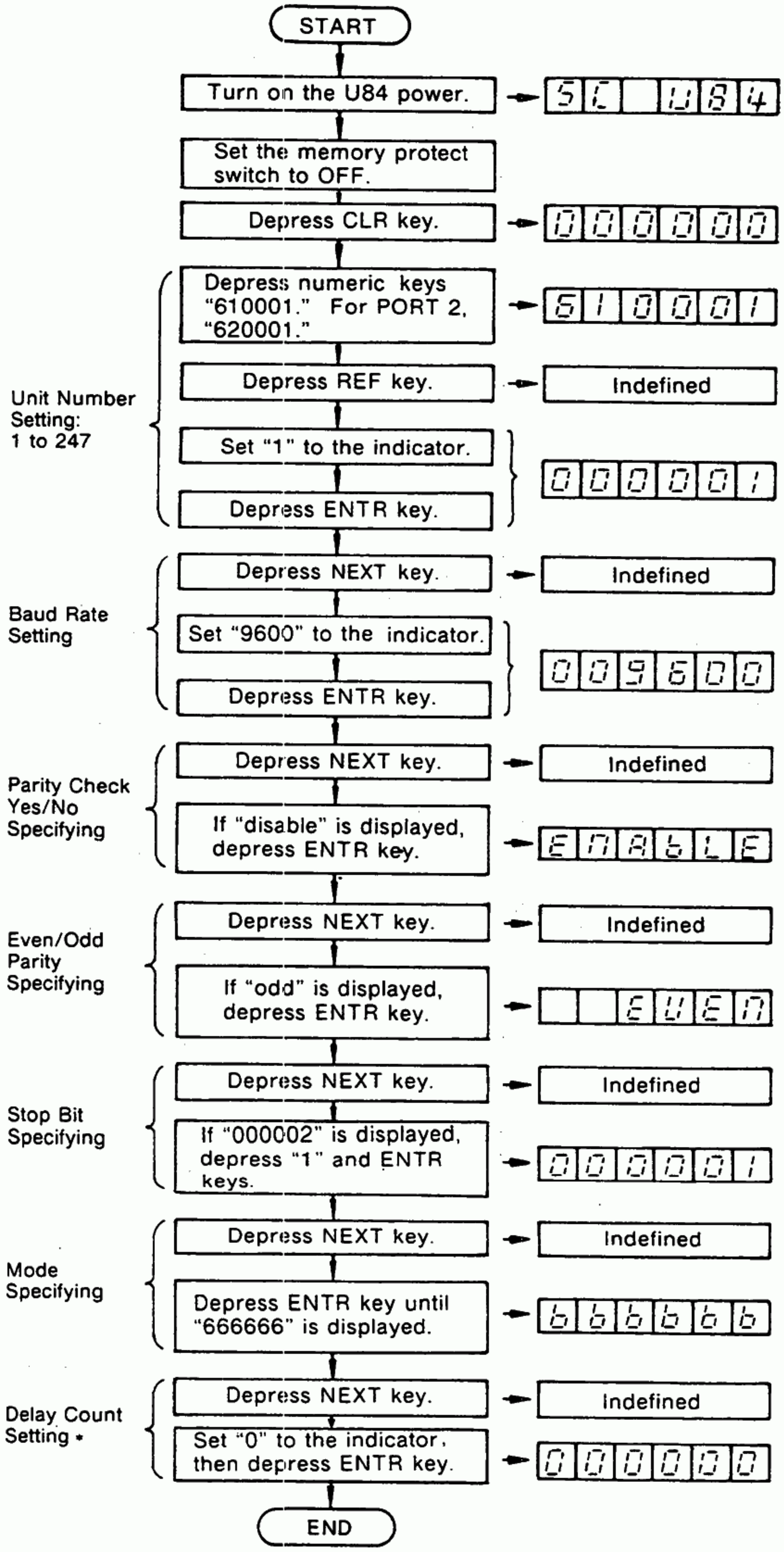
Table 4.1 Setting Items of Communication Parameters by RAP

Items	Description	Indication	Initial Setting
6×0001	Unit number	000001	1
6×0002	Baud rate	009600	9600
6×0003	Parity check enable	ENABLE	Yes
	Parity check disable	dISABLE	
6×0004	Even parity	EUEn	Even
	Odd parity	0dd	
6×0005	1-stop bit	000001	1
	2-stop bit	000002	
6×0006	RTU mode (8-bit data)	bbbbbb	RTU
	ASCII mode (7-bit data)	0ASC11	
6×0007	Delay count (in unit of 10ms)	000000	0

NOTE

1. Port number 1 or 2 is put in the "x" position which is the second digit (from the left) of a six-digit number in the Items. Port number 3 or 4 may be used for future expansion.
2. By inputting the item, the indicator displays it. If the input is in error, depress [CLR] key, then input again.
3. After the item is input, depress [REF] key to display the content of item on the indicator. Then the content of next item is displayed after depressing [NEXT] key.
4. When changing the content set a new content, then depress [ENTR] key.

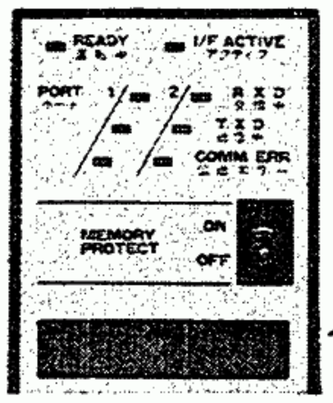
Example of U84 Communication Parameter Setting for Connecting to P150 (For no Initial Setting)



*This function may be used dependent upon the receiving ability of the peripherals by setting a delayed time between the received communication signal and the response of the U84. Generally, "0" is set as the delay count.

4.2.3 TURNING ON P150 POWER

1. Turn on U84 power.



- "SC U84" is displayed on the Register Access Panel (RAP).

- After 5 to 10 seconds, RUN indicator lights.

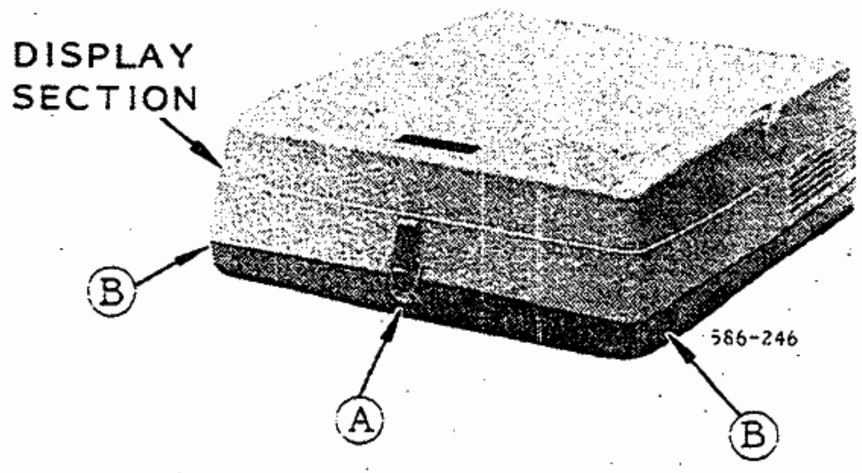
Fig. 4.3 U84 RAP Display

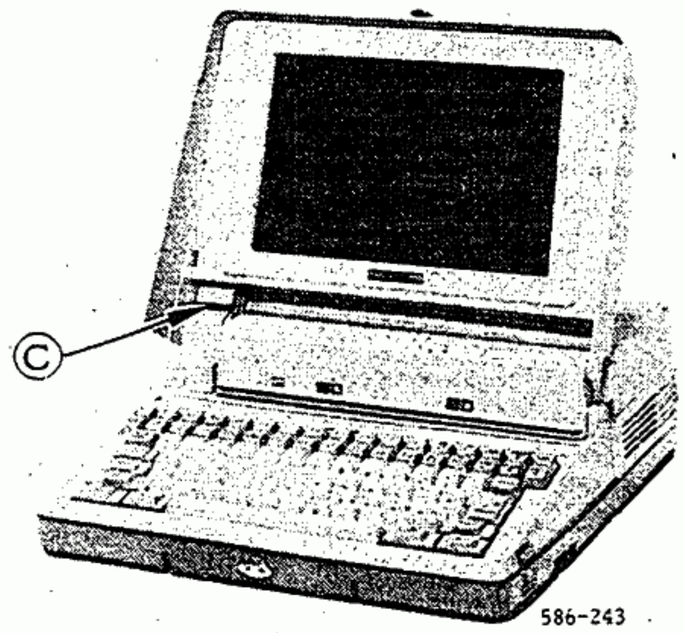
2. Set the P150 as follows:

(1) Release lock Ⓐ.

(2) Fully push the release latches of part Ⓑ to disengage the display section locks.

(3) Lift open the display section until it locks into position with part Ⓒ.





3. Turn on P150 power.

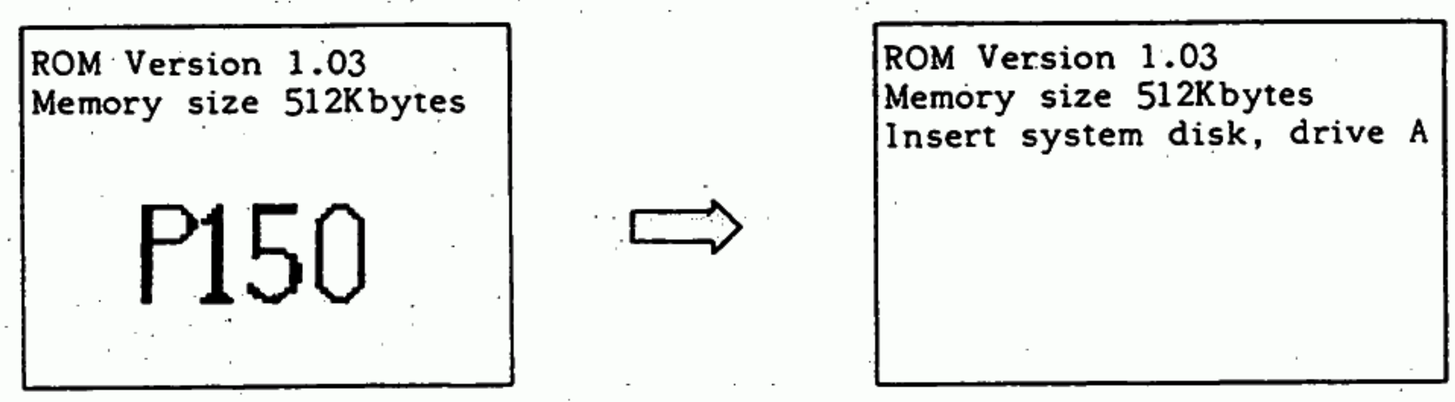
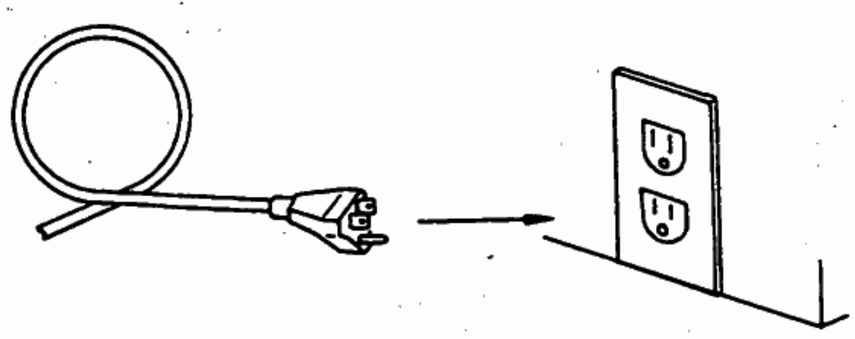


Fig. 4.4 Display Screen

IMPORTANT

(1) Be sure to plug in the power cable to a 100 VAC outlet provided with a grounding terminal.

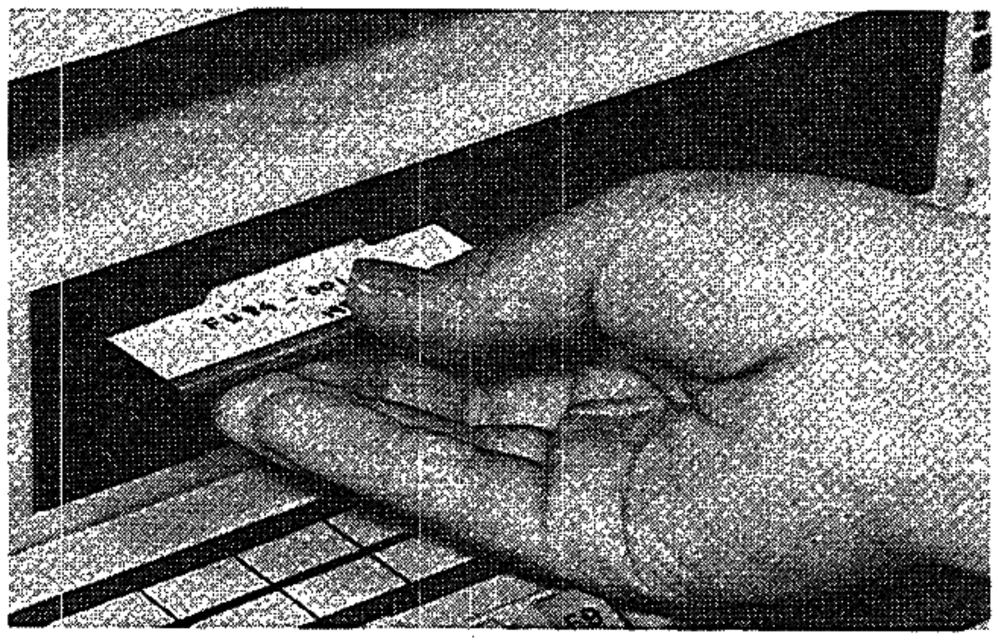


(2) After prolonged storage, when P150 is turned on, the display remains blank for several minutes. This is normal with a plasma display.

4.2.4 SYSTEM DISK READ-IN

START

Insert U84 programmer system disk (Model FU84-E001) correctly in P150 drive A.



586-247

Fig. 4.5 Disk Insertion

POINT · Insert the disk with nameplate side up.

```
Loading system  . . .
```

Fig. 4.6

```
Microsoft MS-DOS Version 2.11
Copyright 1981,82,83 Microsoft corp.

System Release A1.09
Command v. 2.11
```

Fig. 4.7

```
Microsoft MS-DOS Version 2.11
Copyright 1981,82,83 Microsoft corp.

System Release A1.09
Command v. 2.11

A>echo off

----------- U84 ONLINE PROGRAMMER

Current date is Fri 6-13-1986
Enter new date:
```

Fig. 4.8

```
Microsoft MS-DOS Version 2.11
Copyright 1981,82,83 Microsoft corp.

System Release A1.09
Command v. 2.11

A>echo off

----------- U84 ONLINE PROGRAMMER

Current date is Fri 6-13-1986
Enter new date: 6-14-1986
Current time is 16:46:51.00
Enter new date:
```

Fig. 4.9

Key in date and depress [ENTER] key. If the already date is correct, simply depress [ENTER] key

Fig. 4.9

POINT For the date for February 2, 1986, key in 2-2-1986, or 2-2-86, or 2/2/86, and depress [ENTER] key.

①

4.2.4 SYSTEM DISK READ-IN (Cont'd)

①

Key in time and depress ENTER key. If the already displayed time is correct, simply depress ENTER key.

Fig. 4. 10

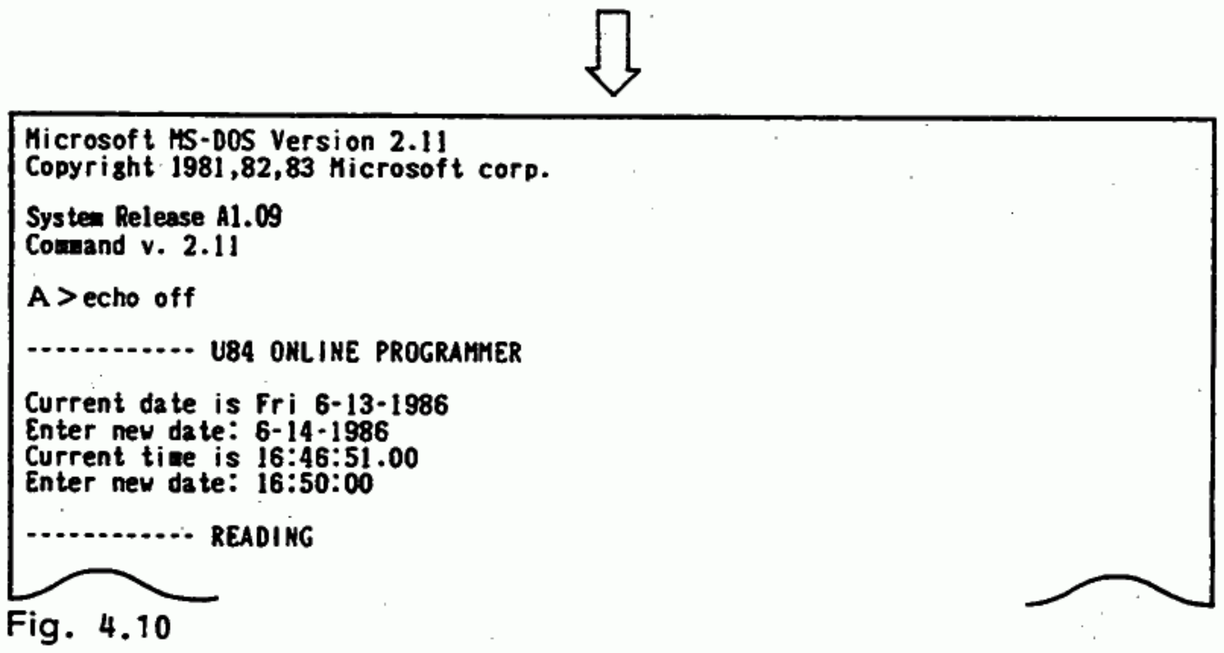


Fig. 4.10

POINT

Key in time using the 24-hour system. For example, for 3:30:00 p.m, key in 15:30:00 and depress ENTER key.

Menu is displayed.

Fig. 4. 11

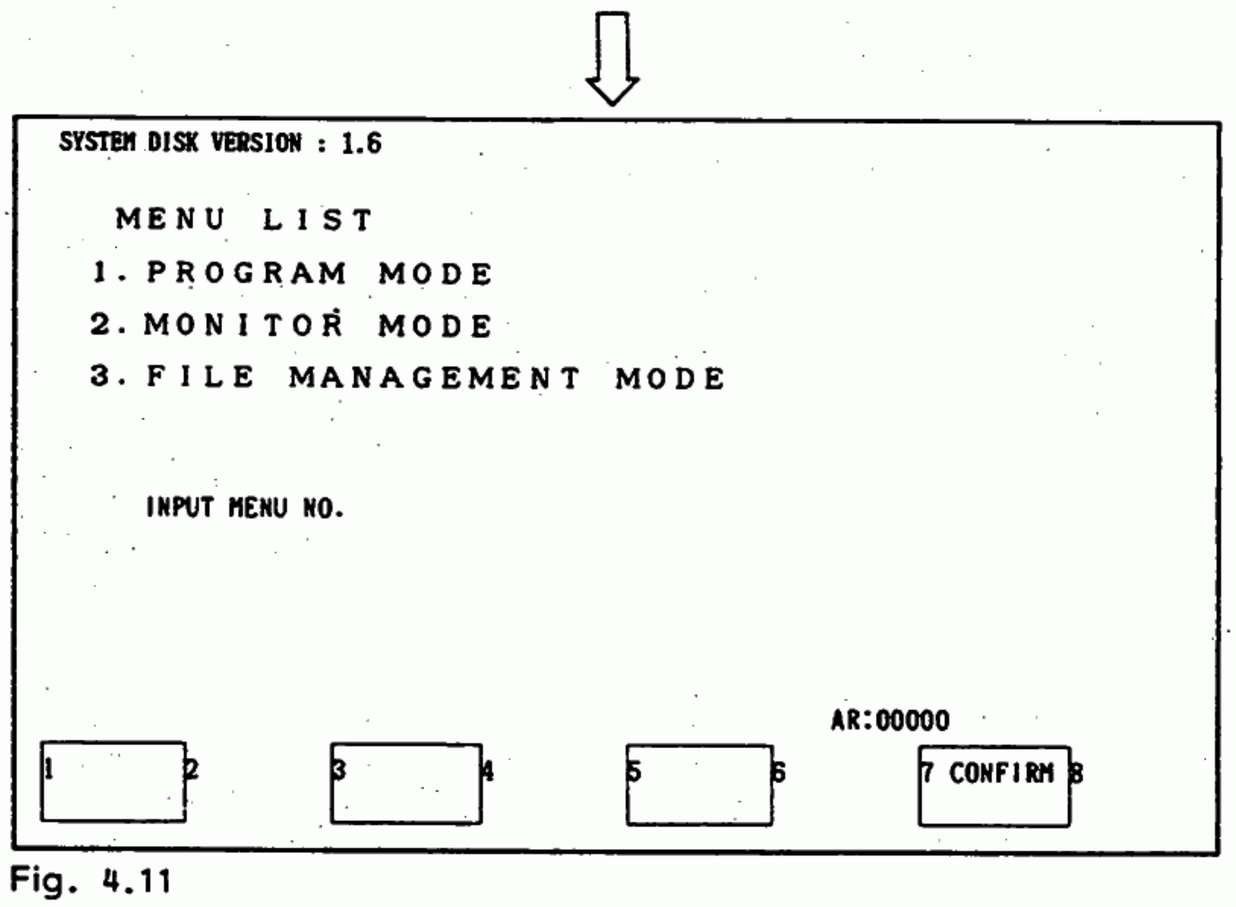


Fig. 4.11

POINT

The eight displayed labels correspond to the variable function keys F1 to F8 on the keyboard, indicating their functions.

②

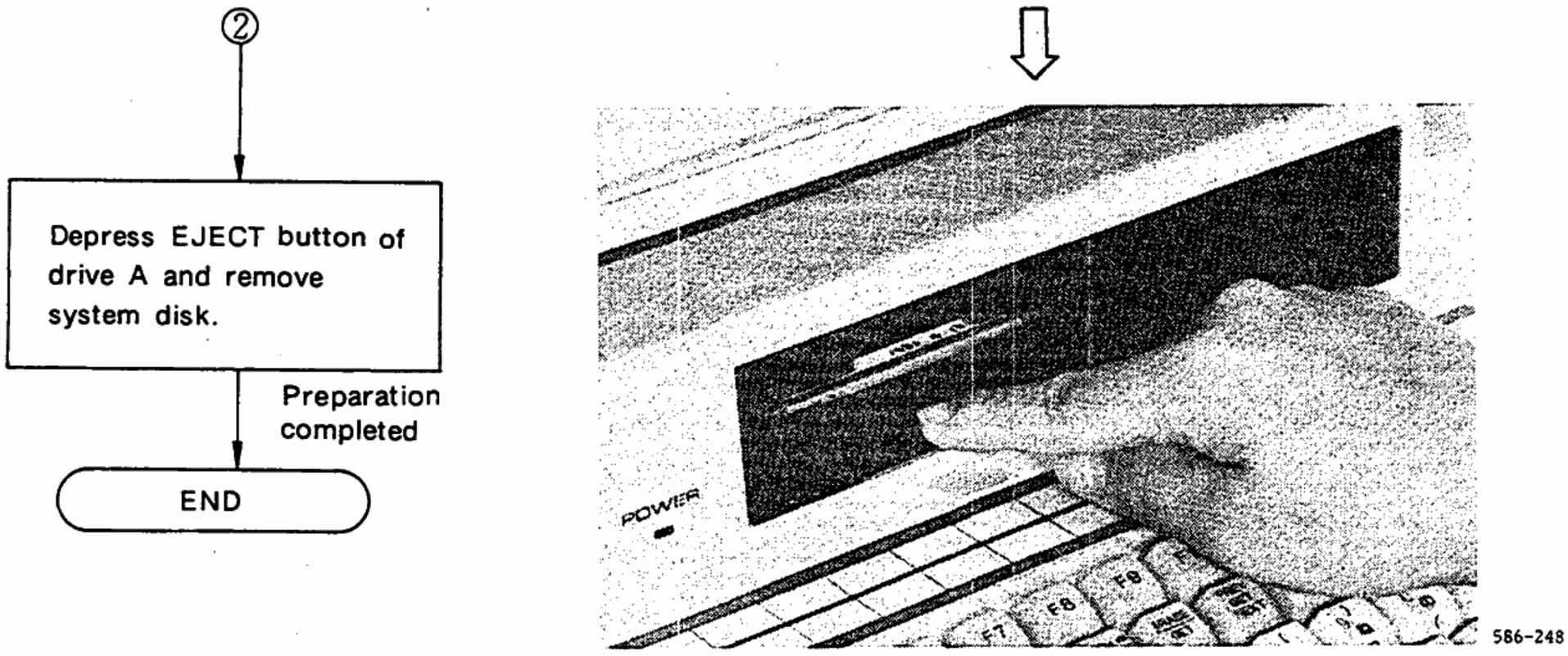


Fig. 4.12 Disk Removal

POINT

Store the removed system disk in the specified area.

NOTE

1. Before inserting a system disk, check that it is a U84 programmer.
2. To restart the system, start from the power supply switching operation.

4. 3 SELECTION OF OPERATION MODE

PROGRAM MODE: This mode is selected to alter memory contents of U84, such as storing and altering ladder circuits, and altering U84 status. In this mode, all the program operations are possible, including operations in the monitor mode.

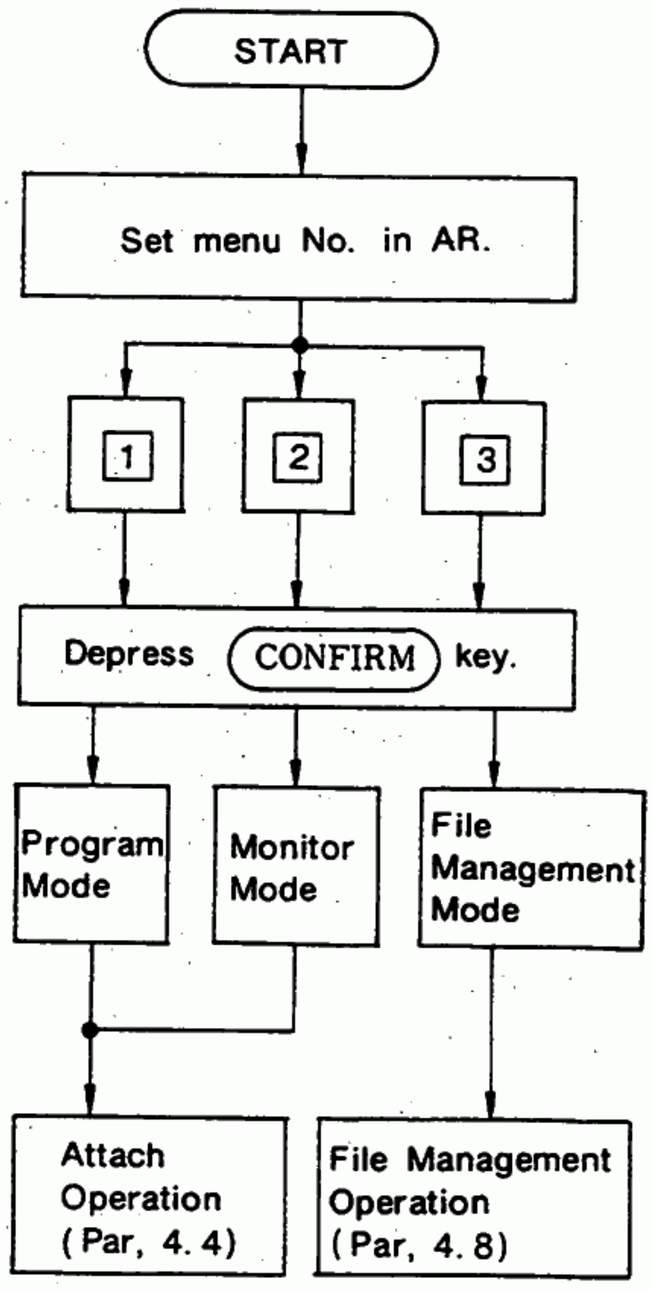
MONITOR MODE: This mode is selected to display the ladder circuits and U84 operation status. In this mode, U84 memory contents cannot be altered. (Accidental or erroneous memory destruction is prevented.)

FILE MANAGEMENT MODE: This mode is selected to check the disk, display file names, delete files and set port parameters etc.

To select the operation modes, use the operation menu (initial display) of P150. Set the memory protect switch of U84 according to the selected mode as shown in Table 3.2.

Table 4.2 Setting of Memory Protect Switch of U84

Menu No.	Operation Mode	Memory Protect Switch of U84
1	Program mode	OFF
2	Monitor mode	ON (or OFF)
3	File management mode	ON (or OFF)



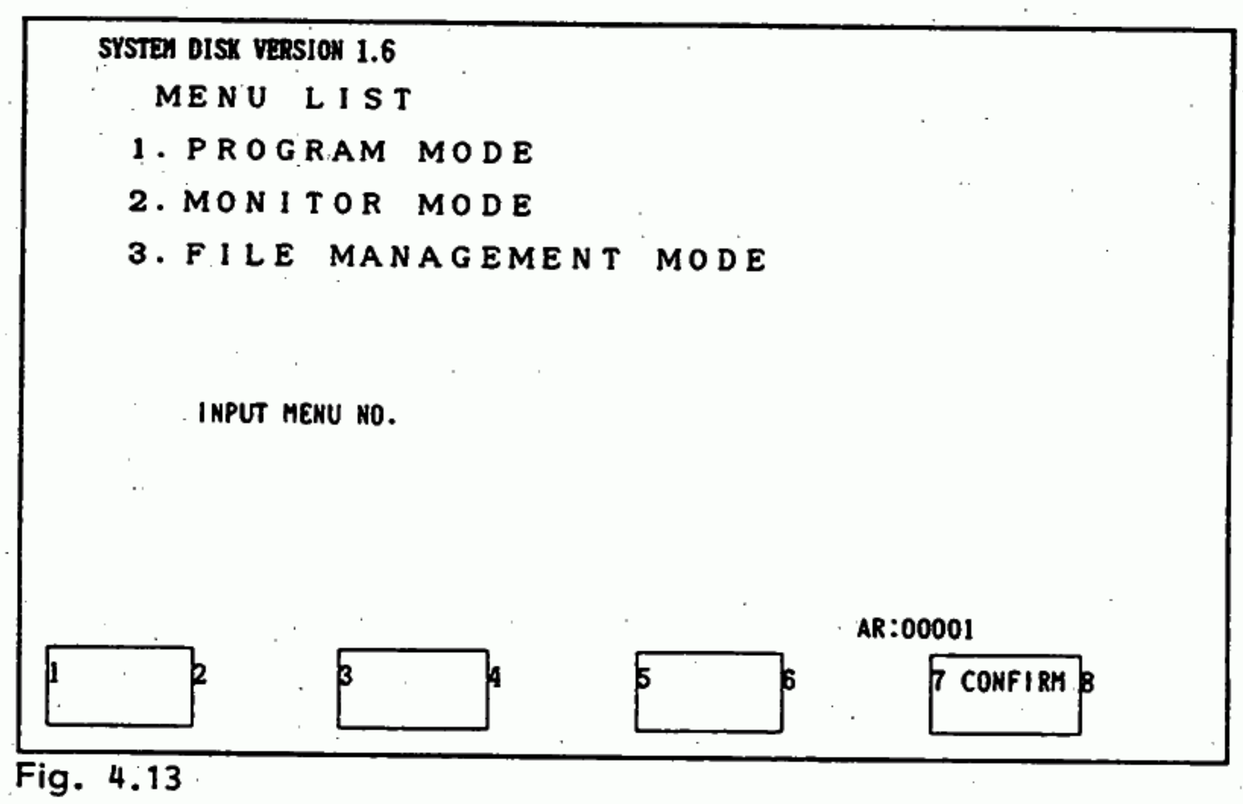


Fig. 4.13

NOTE

1. To clear AR, depress CLR AR / CLR ERR key while depressing SHIFT key.

2. To change modes after making ATTACH operations, first return to the initial display (Fig. 3.13) and select the menu again. To reactive the initial display, either depress SUPERVISORY key first and then, depress INITIAL DISPLAY key, or depress SUPERVISORY key while depressing SHIFT key.

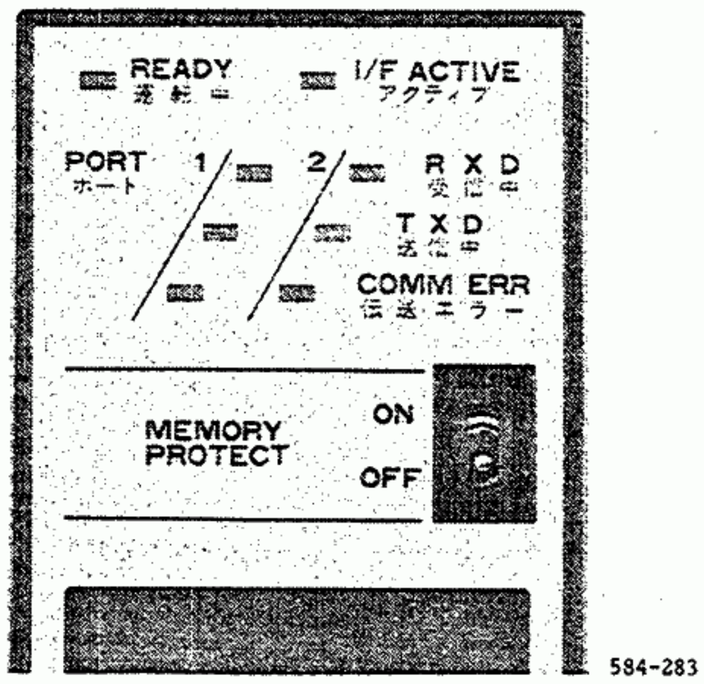


Fig. 4.14 Memory Protect Switch on U84 Communication Module

IMPORTANT

1. Two P150s can be connected to PORT 1 and PORT 2 of a U84 communication module. However, in this case, only one of them can be used in the monitor mode.
2. Even when the memory protect switch is on, the program mode can be selected. However, memory content altering operations such as ladder circuit storing, altering, and U84 status altering are not possible.
3. All the file management mode operations can be executed with the P150 alone (without connecting to the U84 communication module).

4. 4 ATTACH OPERATION

"ATTACH" means the following two points.

- Read-in a system disk in P150.
- Connect P150 to U84 by software.

Interaction becomes possible only through the ATTACH operation.

The ATTACH operation is required for the program mode and the monitor mode. It is not required for the file management mode.

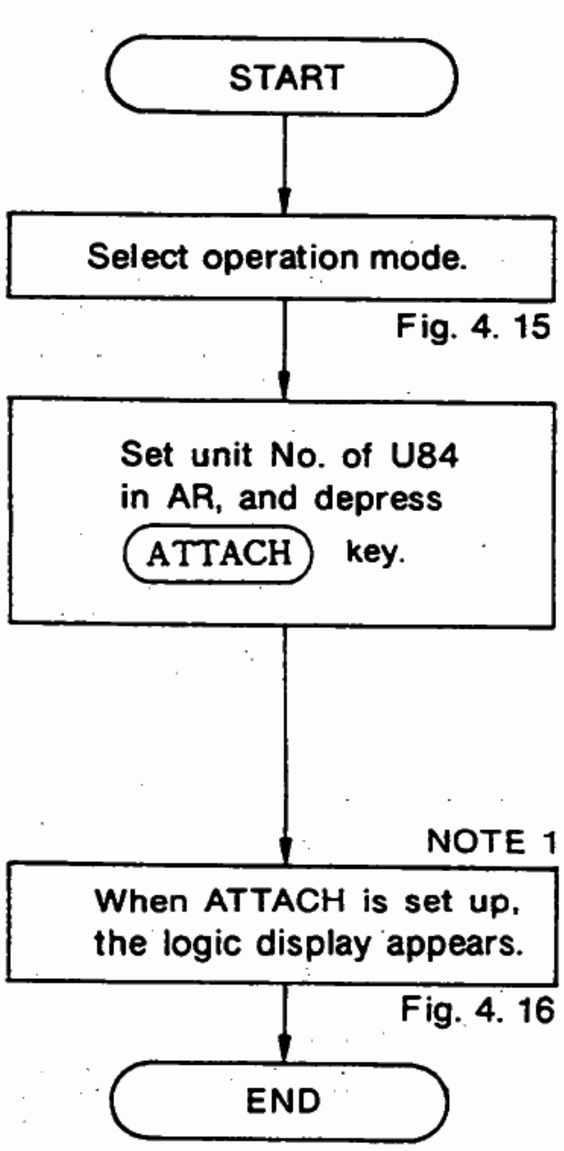


Fig. 4. 15

Fig. 4. 16

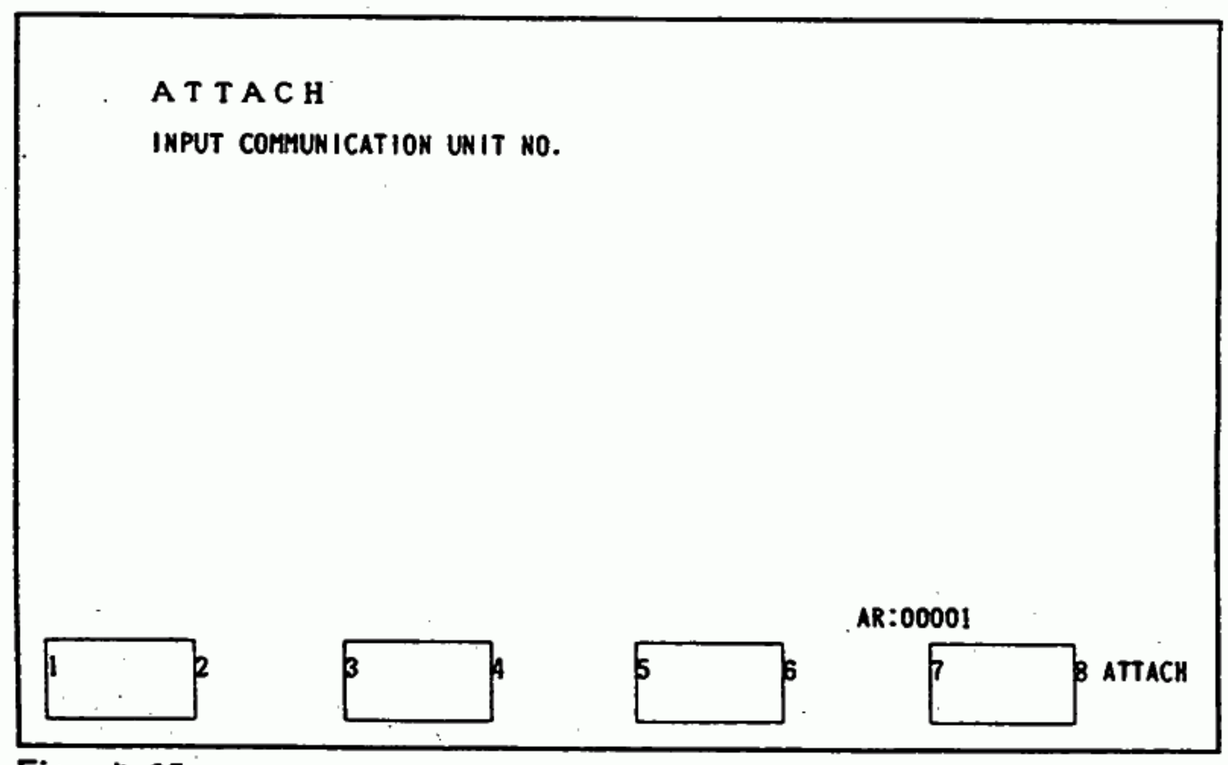


Fig. 4.15

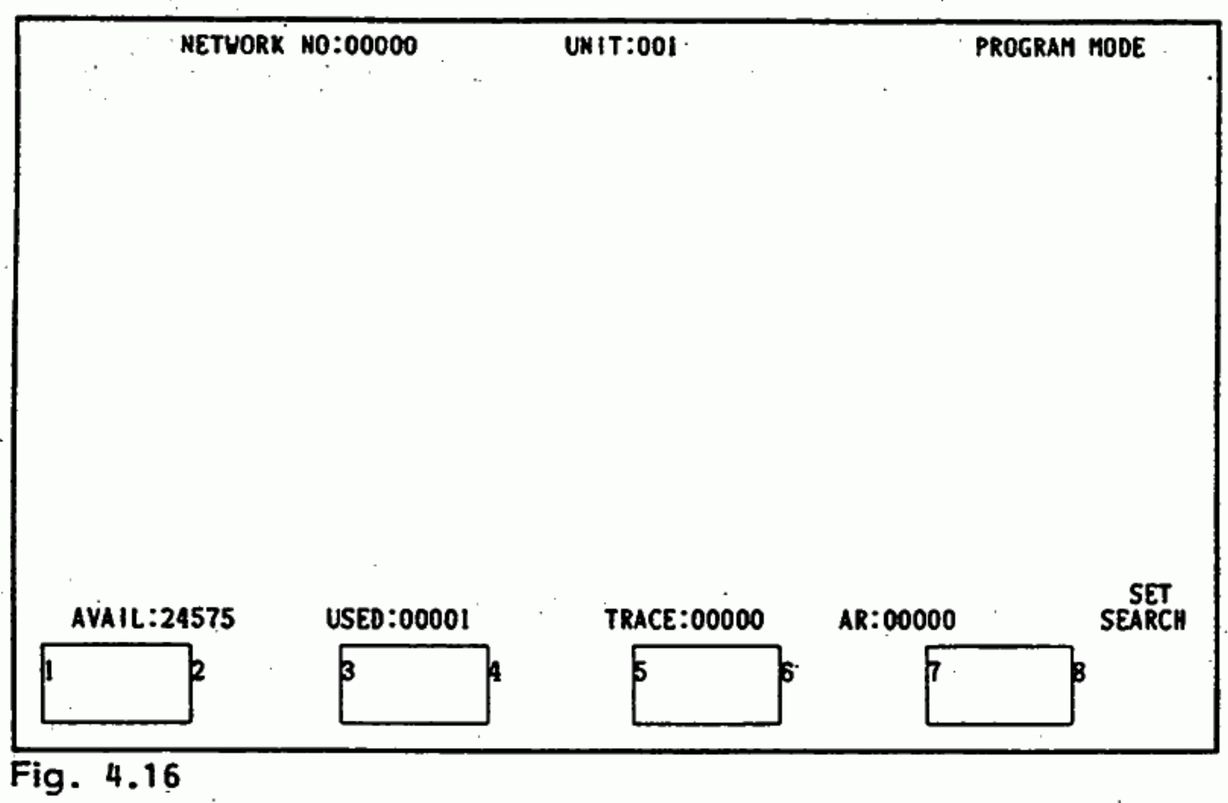


Fig. 4.16

NOTE

1. If networks are already stored in U84, network 1 is displayed after the ATTACH operation.
2. When ATTACH operation is executed, it need not be repeated unless the state before ATTACH (initial display) is re-initialed.
3. The range of unit Nos. is 1 to 247. Unit No. is preset to 1 at the factory.
4. With the display shown in Fig. 4.16, the programmer can be operated. Either "PROGRAM MODE" or "MONITOR MODE" is displayed in the upper right area of the screen, according to the selected mode.

4. 5 SUPERVISORY OPERATION

Depressing [SUPER VISORY] key after ATTACH activation produces the display shown in Fig. 4.17, enabling the SUPERVISORY operations indicated in the label area.

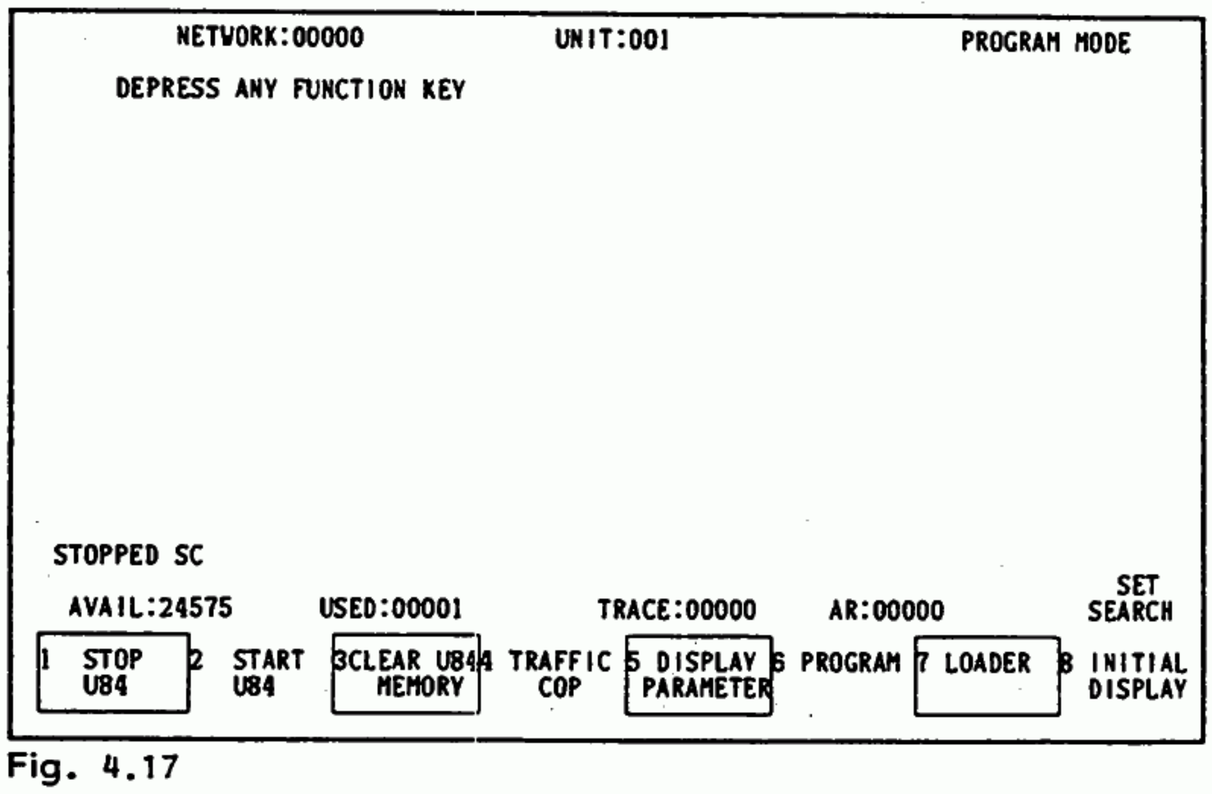


Fig. 4.17

NOTE

1. In the Monitor mode, labels (STOP U84), (START U84) and (CLEAR U84 MEMORY) are not displayed.
2. When (INITIAL DISPLAY) key is depressed, or [SHIFT] and [SUPER VISORY] keys are depressed simultaneously, the initial display (Fig. 4.13) is appeared.
3. Deppressing (PROGRAM) key restores the logic display. When programs are already stored, network 1 is displayed, and when nothing is stored, network 0 (Fig. 4.16) is displayed.

4.5.1 PARAMETER DISPLAY

Memory capacity, communication port parameters of U84, and number of coils, discrete inputs, input registers and hold registers can be displayed by the following procedure. If parameters are faulty, error message "PORT PARAMETER ERROR" is displayed.

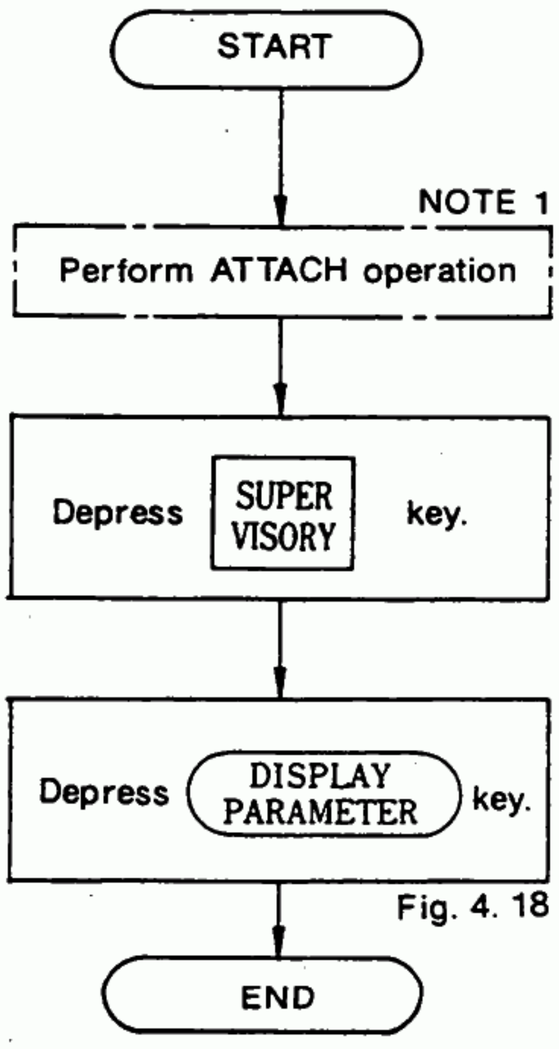


Fig. 4. 18

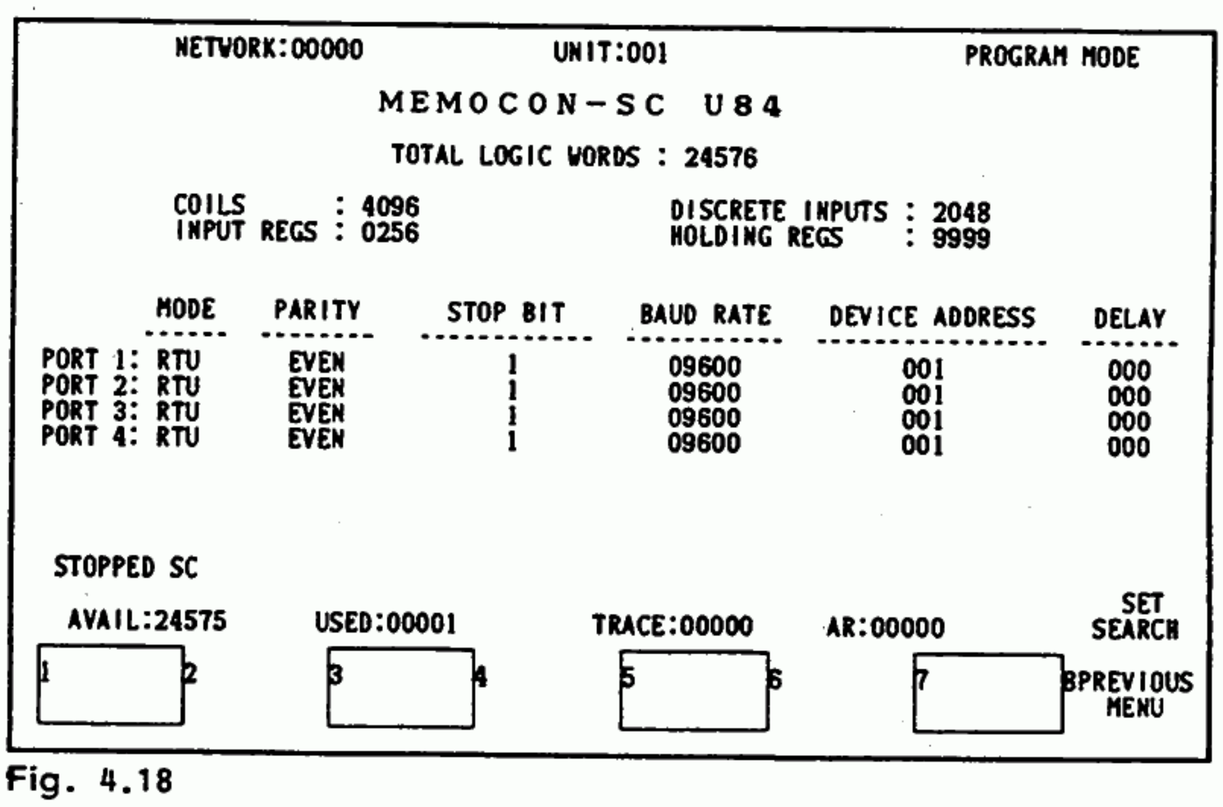


Fig. 4.18

NOTE

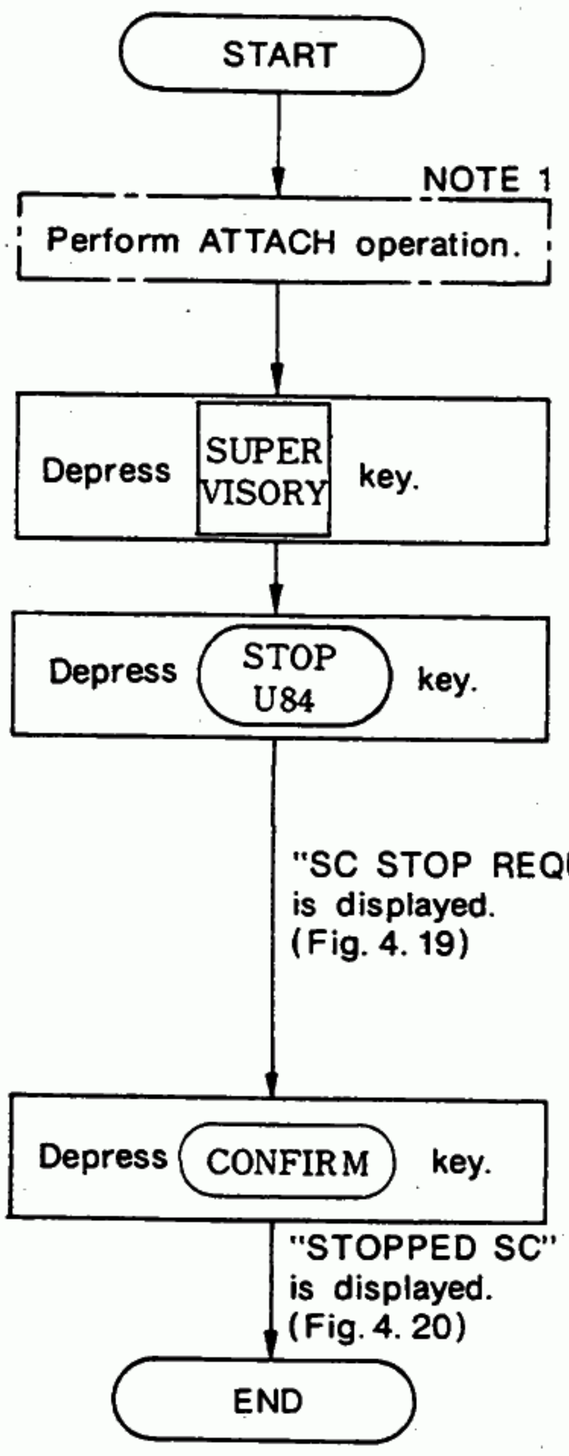
1. When ATTACH operation has already been completed, this step can be skipped.
2. Depressing PREVIOUS DISPLAY key returns the state shown in Fig. 4.17.
3. Ports 3 and 4 are for future expansion.

4.5.2 STOP U84

This operation is used to stop U84 running. When the U84 is stopped, "RUN" LED of U84 goes OFF.

POINT

- With U84 stopped, all operation are available. Memory clear, I/O allocation altering, network move, single sweep and load can be performed only with U84 stopped.



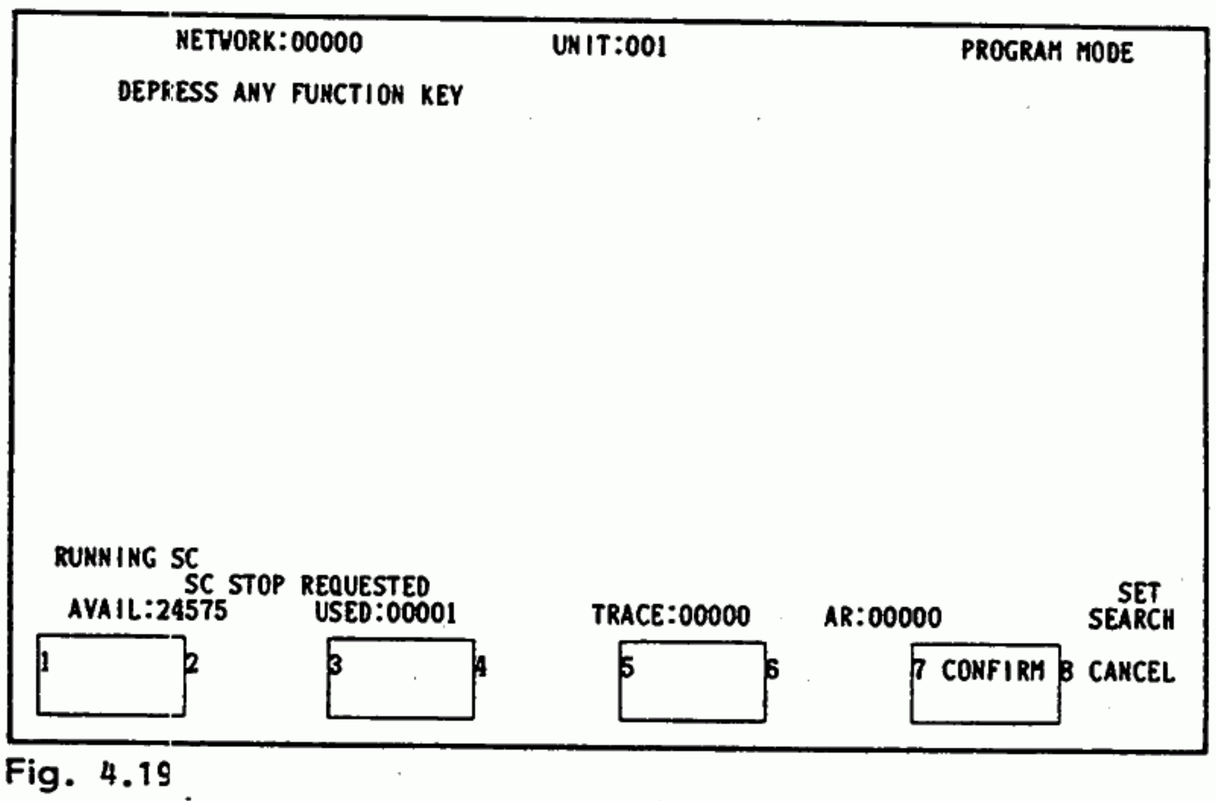


Fig. 4.19

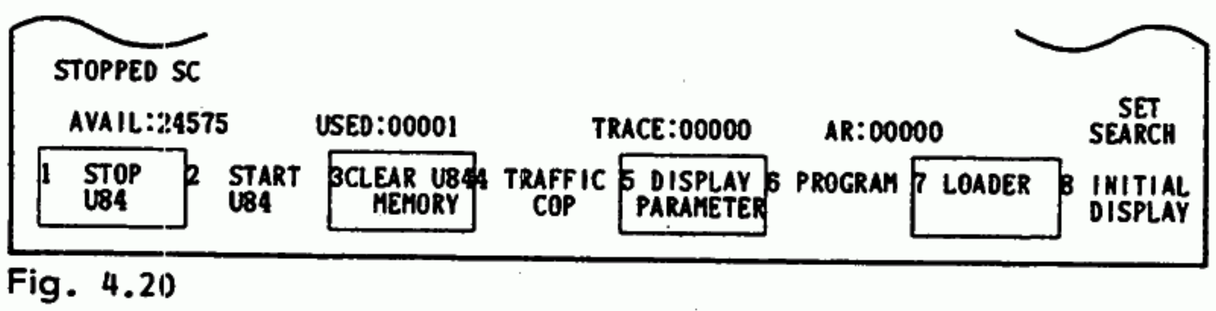


Fig. 4.20

NOTE

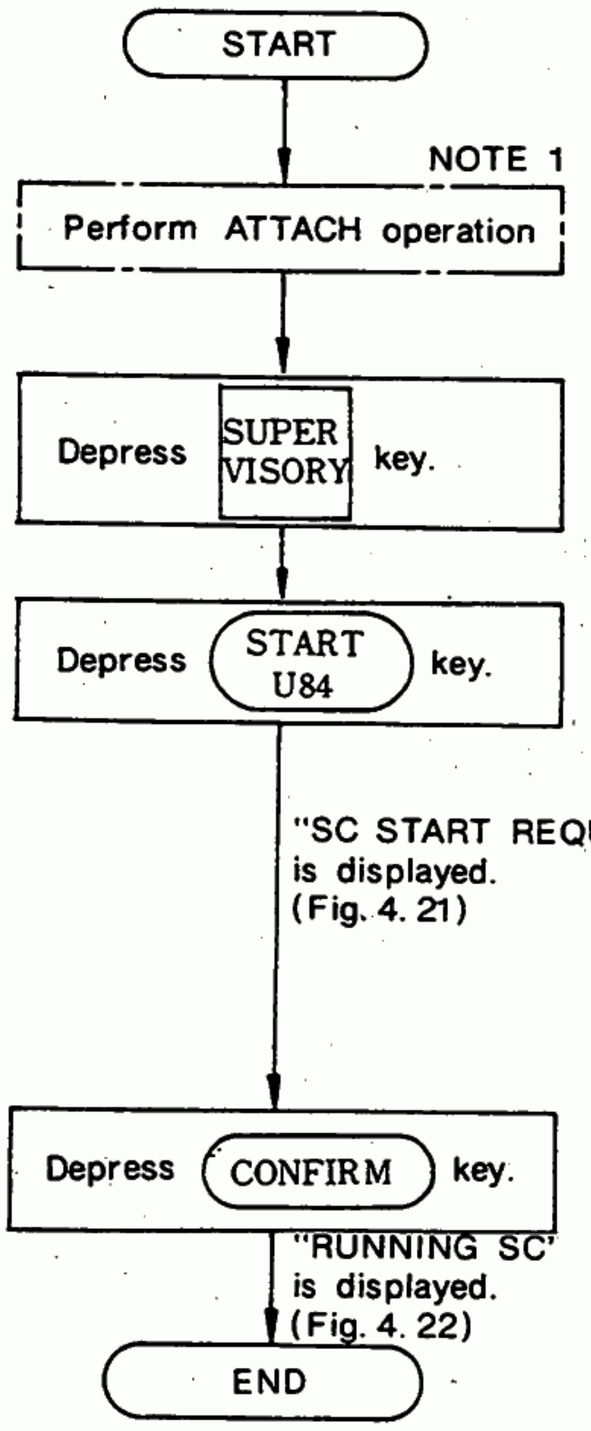
1. When ATTACH operation has already been completed, this step can be skipped.
2. When depressing (CANCEL) key instead of (CONFIRM) key, only label display returns to the display shown in Fig. 4.17.

4.5.3 START U84

This is U84 start operation, with the U84 stopped. When the U84 is started, "RUN" LED of U84 lights.

POINT

- In both U84 running and U84 stopped, program altering and storing operations are performed. Memory clear, I/O allocation, network move, single sweep and load can be performed only with U84 stopped.



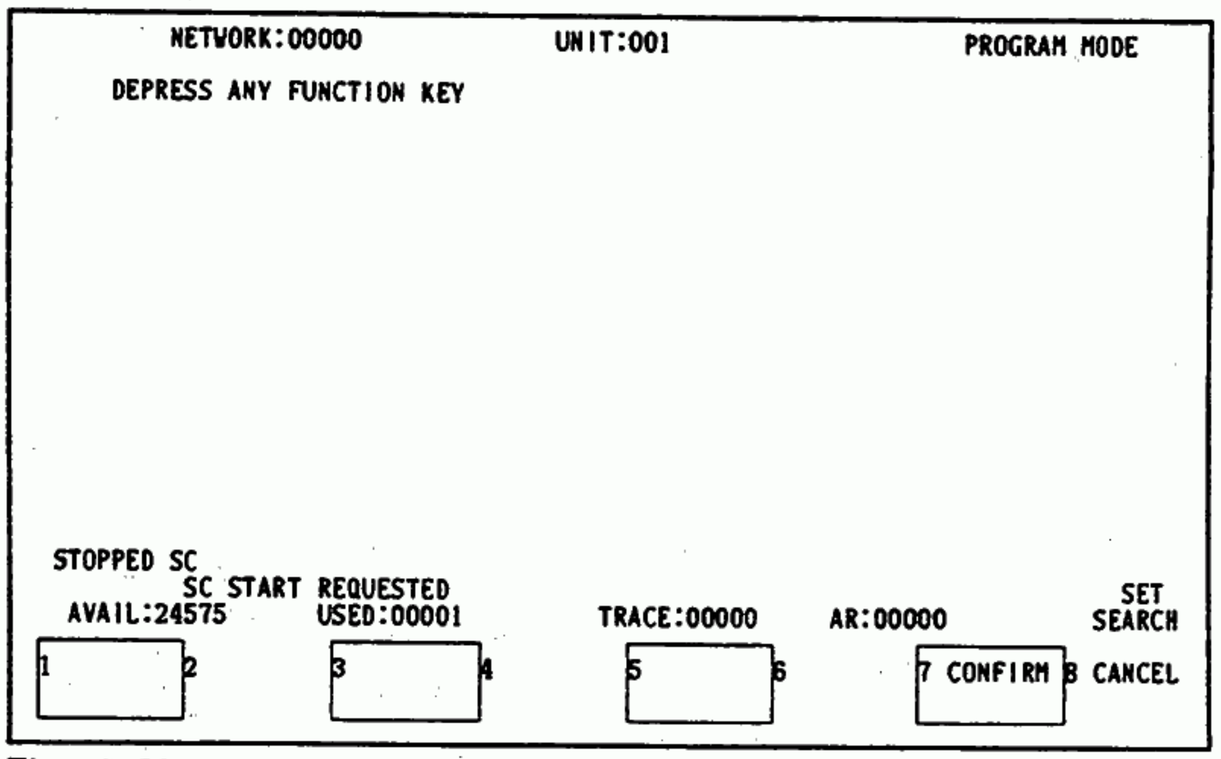


Fig. 4.21

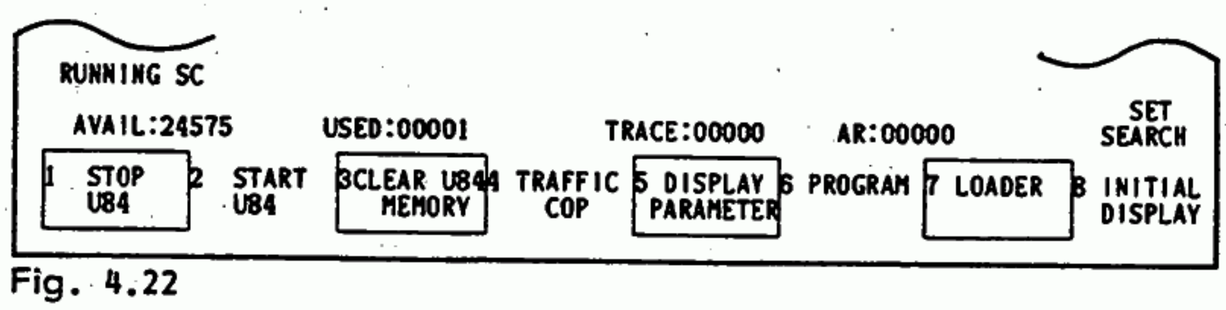


Fig. 4.22

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. When depressing (CANCEL) key instead of (CONFIRM) key, only label display returns to the display shown in Fig. 4.17.
3. It takes approximately 5 to 15 seconds to light RUN LED after depressing (CONFIRM) key.

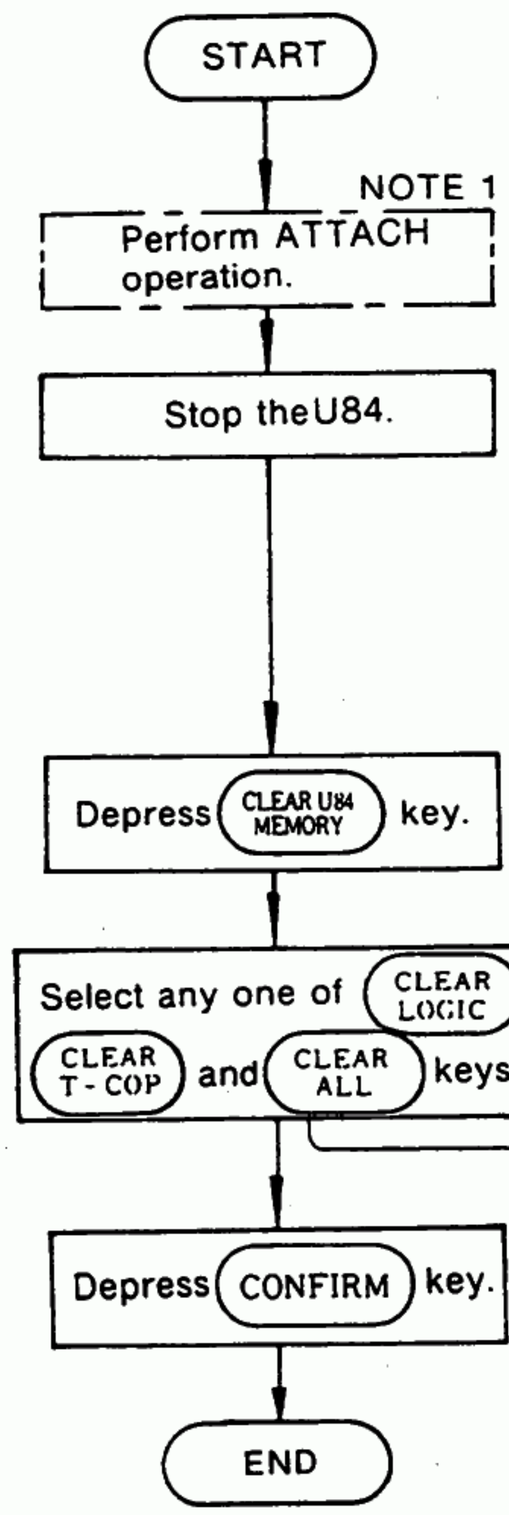
4.5.4 CLEAR U84 MEMORY

This memory-clearing function for contents of network, register and I/O allocation table. There are three methods for clearing the memory.

- For clearing the contents of the networks and the registers only ..... (CLEAR LOGIC)
- For clearing the contents of I/O allocation tables only ..... (CLEAR T-COP)
- For clearing the contents of the network, the register and I/O allocation tables ..... (CLEAR ALL)

POINT

- Stop the U84 before starting this operation.



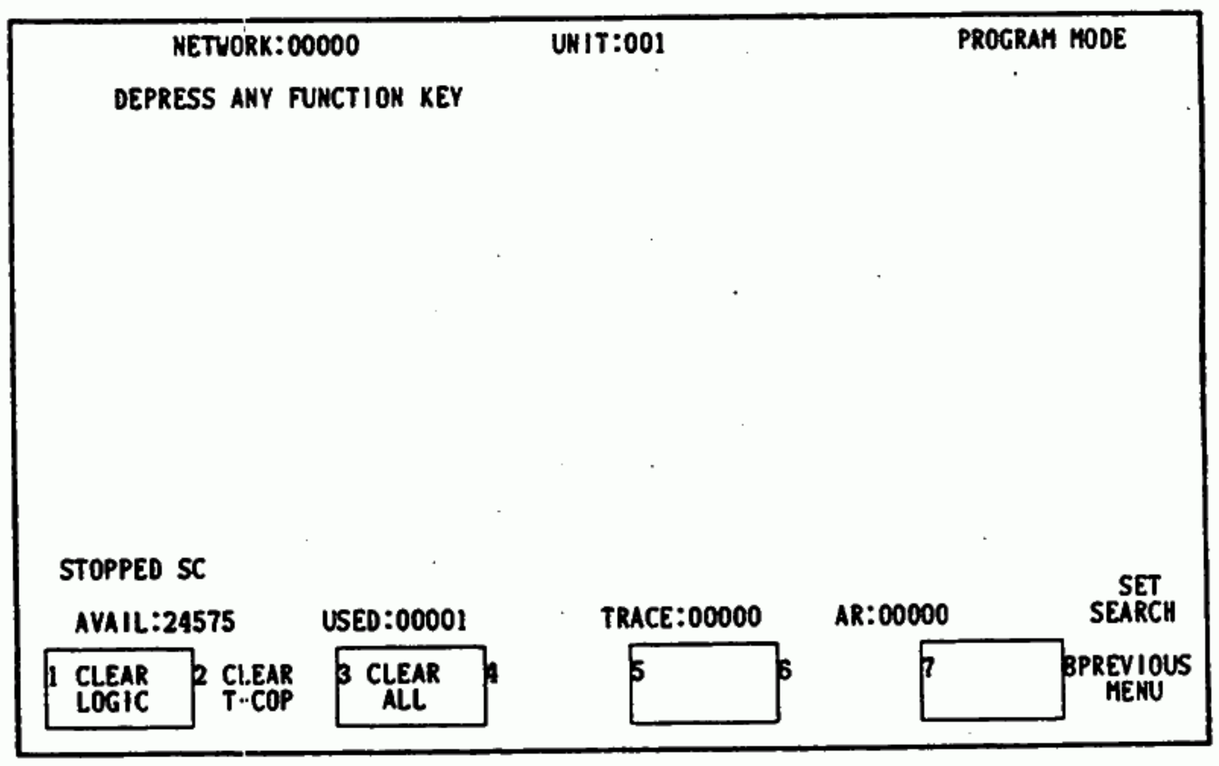


Fig. 4.23

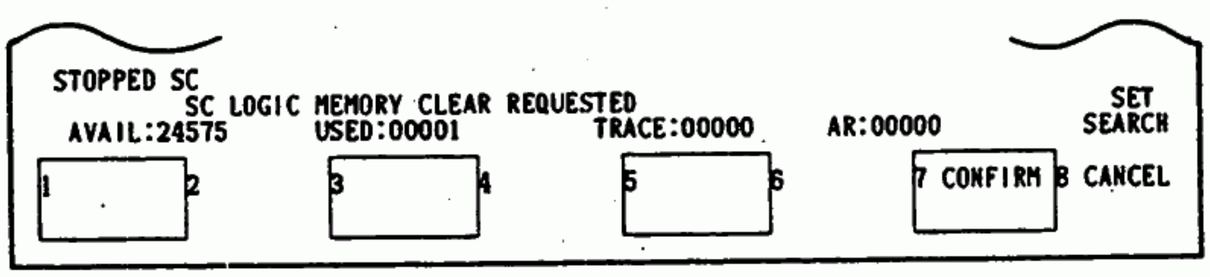


Fig. 4.24

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. When depressing (CANCEL) key instead of (CONFIRM) key, only label display returns to the display shown in Fig. 4.17.

4.5.5 I/O ALLOCATIONS

The I/O sections of U84 comprise a completely independent free location system, in which any I/O modules can be installed in any slots. Therefore, all the slots must be allocated to the numbers of the I/O modules to be installed. (This is called I/O allocation.) For each slot, the first reference number and the number of I/O points are set independently. Even if I/O allocation of any slot is altered, the reference number of any other slot may not be shifted.

POINT

- When alteration of I/O allocation is required, the U84 must be stopped.
- In the monitor mode or the U84 running, I/O allocation cannot be altered, but I/O allocation contents can be displayed.
- When storing or altering the I/O allocation contents, (WRITE T-COP) key should be depressed on each screen with I/O allocation table to be stored or altered.

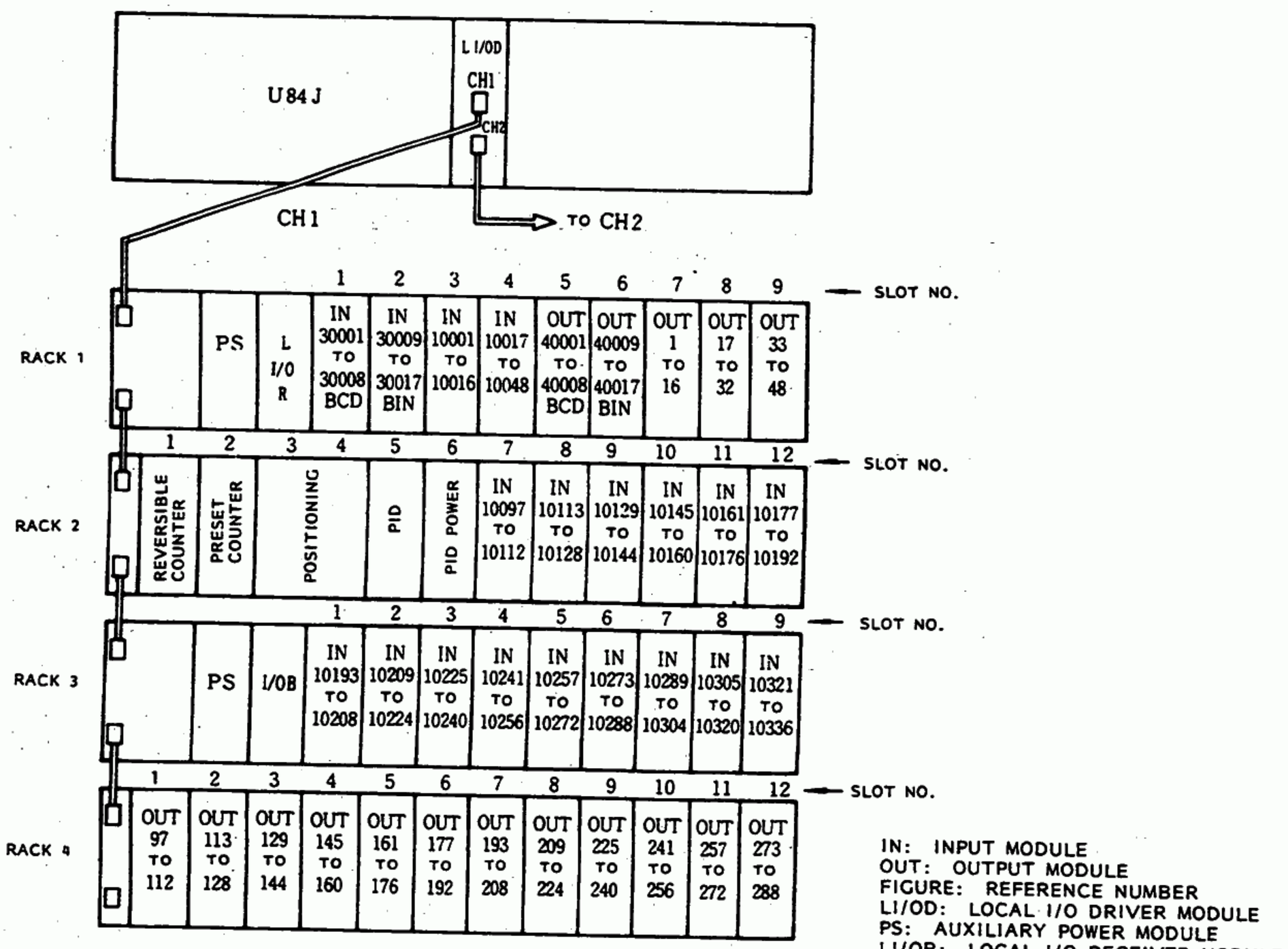


Fig. 4.25 Sample I/O Allocation

■ I/O ALLOCATION DISPLAYS

I/O allocation display has 8 displays per channel as shown in Fig. 4.26; up to 4 racks for inputs and outputs can be displayed.

Rack 1 Input Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# INPUT # CHANNEL:01 RACK:1

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	-----	---	30001	08	--
2	-----	---	30009	--	C8
3	10001	016	-----	--	--
4	10017	032	-----	--	--
5	-----	---	-----	--	--
6	-----	---	-----	--	--
7	-----	---	-----	--	--
8	-----	---	-----	--	--
9	-----	---	-----	--	--

Rack 1 Output Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# OUTPUT # CHANNEL:01 RACK:1

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	-----	---	-----	--	--
2	-----	---	-----	--	--
3	-----	---	-----	--	--
4	-----	---	-----	--	--
5	-----	---	40001	08	--
6	-----	---	40009	--	08
7	00001	016	-----	--	--
8	00017	016	-----	--	--
9	00033	016	-----	--	--

Rack 2 Input Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# INPUT # CHANNEL:01 RACK:2

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	10049	008	30017	--	02
2	10057	016	30019	--	02
3	-----	---	-----	--	--
4	10073	016	30021	--	04
5	10089	008	30025	--	02
6	-----	---	-----	--	--
7	10097	016	-----	--	--
8	10113	016	-----	--	--
9	10129	016	-----	--	--
10	10145	016	-----	--	--
11	10161	016	-----	--	--
12	10177	016	-----	--	--

Rack 2 Output Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# OUTPUT # CHANNEL:01 RACK:2

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	00049	008	40017	--	02
2	00057	016	40019	--	08
3	-----	---	-----	--	--
4	00073	016	40027	--	04
5	00089	008	40031	--	03
6	-----	---	-----	--	--
7	-----	---	-----	--	--
8	-----	---	-----	--	--
9	-----	---	-----	--	--
10	-----	---	-----	--	--
11	-----	---	-----	--	--
12	-----	---	-----	--	--

Rack 3 Input Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# INPUT # CHANNEL:01 RACK:3

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	10193	016	-----	--	--
2	10209	016	-----	--	--
3	10225	016	-----	--	--
4	10241	016	-----	--	--
5	10257	016	-----	--	--
6	10273	016	-----	--	--
7	10289	016	-----	--	--
8	10305	016	-----	--	--
9	10321	016	-----	--	--

Rack 3 Output Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# OUTPUT # CHANNEL:01 RACK:3

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	-----	---	-----	--	--
2	-----	---	-----	--	--
3	-----	---	-----	--	--
4	-----	---	-----	--	--
5	-----	---	-----	--	--
6	-----	---	-----	--	--
7	-----	---	-----	--	--
8	-----	---	-----	--	--
9	-----	---	-----	--	--

Rack 4 Input Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# INPUT # CHANNEL:01 RACK:4

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	-----	---	-----	--	--
2	-----	---	-----	--	--
3	-----	---	-----	--	--
4	-----	---	-----	--	--
5	-----	---	-----	--	--
6	-----	---	-----	--	--
7	-----	---	-----	--	--
8	-----	---	-----	--	--
9	-----	---	-----	--	--
10	-----	---	-----	--	--
11	-----	---	-----	--	--
12	-----	---	-----	--	--

Rack 4 Output Allocation

NETWORK:00000 UNIT:001 PROGRAM MODE
\# OUTPUT # CHANNEL:01 RACK:4

SLOT	DISCRETE REF #	DISCRETE POINTS	REGISTER REF #	REGISTER BCD	REGISTER BINARY
1	00097	016	-----	--	--
2	00113	016	-----	--	--
3	00129	016	-----	--	--
4	00145	016	-----	--	--
5	00161	016	-----	--	--
6	00177	016	-----	--	--
7	00193	016	-----	--	--
8	00209	016	-----	--	--
9	00225	016	-----	--	--
10	00241	016	-----	--	--
11	00257	016	-----	--	--
12	00273	016	-----	--	--

Fig. 4.26 I/O Allocation Displays

■ DESCRIPTION OF I/O ALLOCATION

I/O allocation should be made to all slots on which the I/O module is mounted. Display the eight I/O allocation displays for each channel, and set the number according to Table 4.5. Number of slots differs according to channel and slot. (Tables 4.3 and 4.4; Figs. 4.27 and 4.28)

Table 4.3 No. of Channels, Racks and Slots for U84 and U84J

Channel No.	Rack No.	Slot No.			
		Rack 1	Rack 2	Rack 3	Rack 4
1, 2 (Local I/O)	1 to 4	1 to 9	1 to 12	1 to 9	1 to 12
3 to 10 (Remote I/O)	1 to 4	1 to 8*	1 to 12	1 to 9	1 to 12

*With P150, up to slot 9 can be displayed, but the I/O allocation for slot 9 is disregarded, even when made.

Table 4.4 No. of Channels, Racks and Slots for U84S

Channel No.	Rack No.	Slot No.			
		Rack 1	Rack 2	Rack 3	Rack 4
1 (Local I/O)	1 to 4	1 to 6*	1 to 12	1 to 9	1 to 12
2 (Local I/O)	1, 2	1 to 9	1 to 12	-†	-†

*With P150, up to slot 9 can be displayed, but the I/O allocation for slot 9 is disregarded, even when made. The I/O allocation to those slots among 1 through 4 to which the ASCII module is attached is also disregarded.
†With P150, racks 3 and 4 can be displayed, but any I/O allocation to them is disregarded.

· Discrete signal (ON/OFF signal)

	Reference No.	Quantity	
Input	10001	016 ←	For allocation of 16 signals from 10001 (10001 to 10016)
	10017	032 ←	For allocation of 32 signals from 10017 (10017 to 10048)
Output	00001	016 ←	For allocation of 16 signals from 1 (1 to 16)
	00017	032 ←	For allocation of 32 signals from 17 (17 to 48)
	----	--- ←	No allocation

Set the first reference No. to be allocated to reference No.
Input relay: 10001 + 8N
Output coil: 00001 + 8N N = 0, 1, 2, ... 255

Note: Number of input relays + Number of output coils ≦ 2048

· Register No. (BCD or Binary signal)

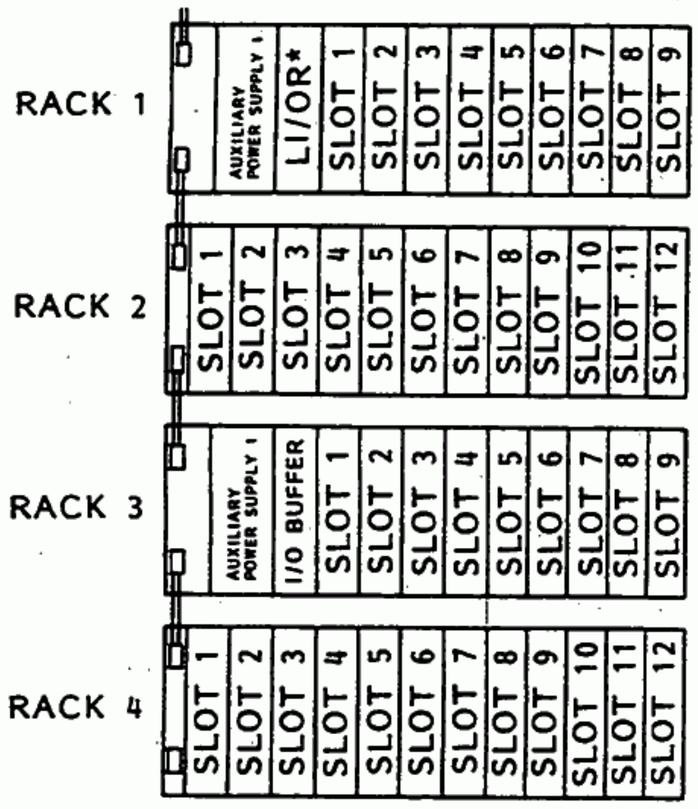
	Reference No.	BCD	Binary	
Input	30001	08	--	← For allocation of 8 BCD points from 30001 (30001 to 30008)
	30009	--	08	← For allocation of 8 binary points from 30009 (30009 to 30016)
Output	40001	08	--	← For allocation of 8 BCD points from 40001 (40001 to 40008)
	40009	--	08	← For allocation of 8 binary points from 40009 (40009 to 40016)
	----	--	--	← No allocation

Number restrict of BCD and binary points in same slot:
  Number of BCD points ≦ 0 to 8
  Number of binary points ≦ 0 to 8
  Number of BCD + binary points ≦ 0 to 8

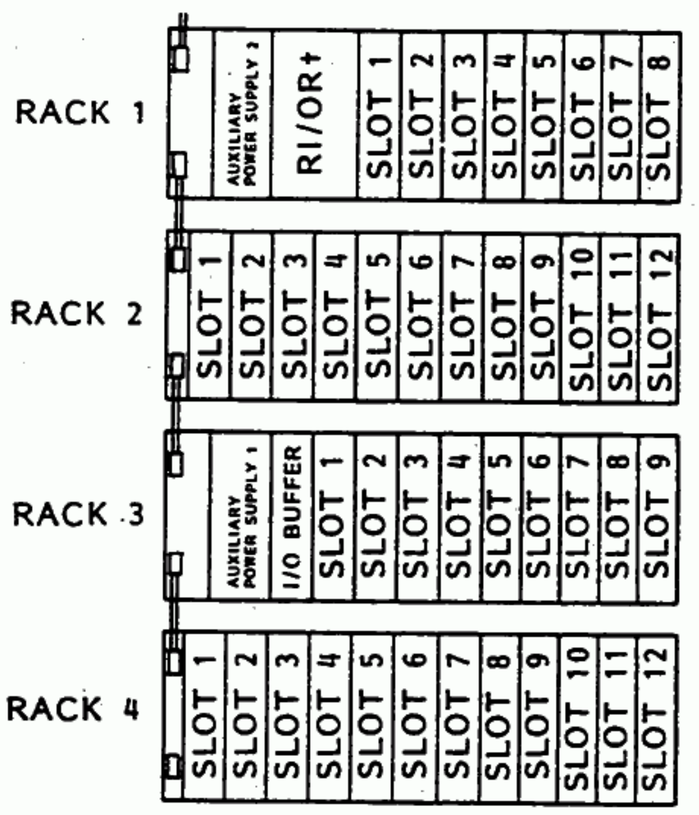
Note: Number of input registers + Number of output registers ≦ 256

■ CONFIGURATION OF I/O SECTION

LOCAL I/O (CHANNEL 1, 2)



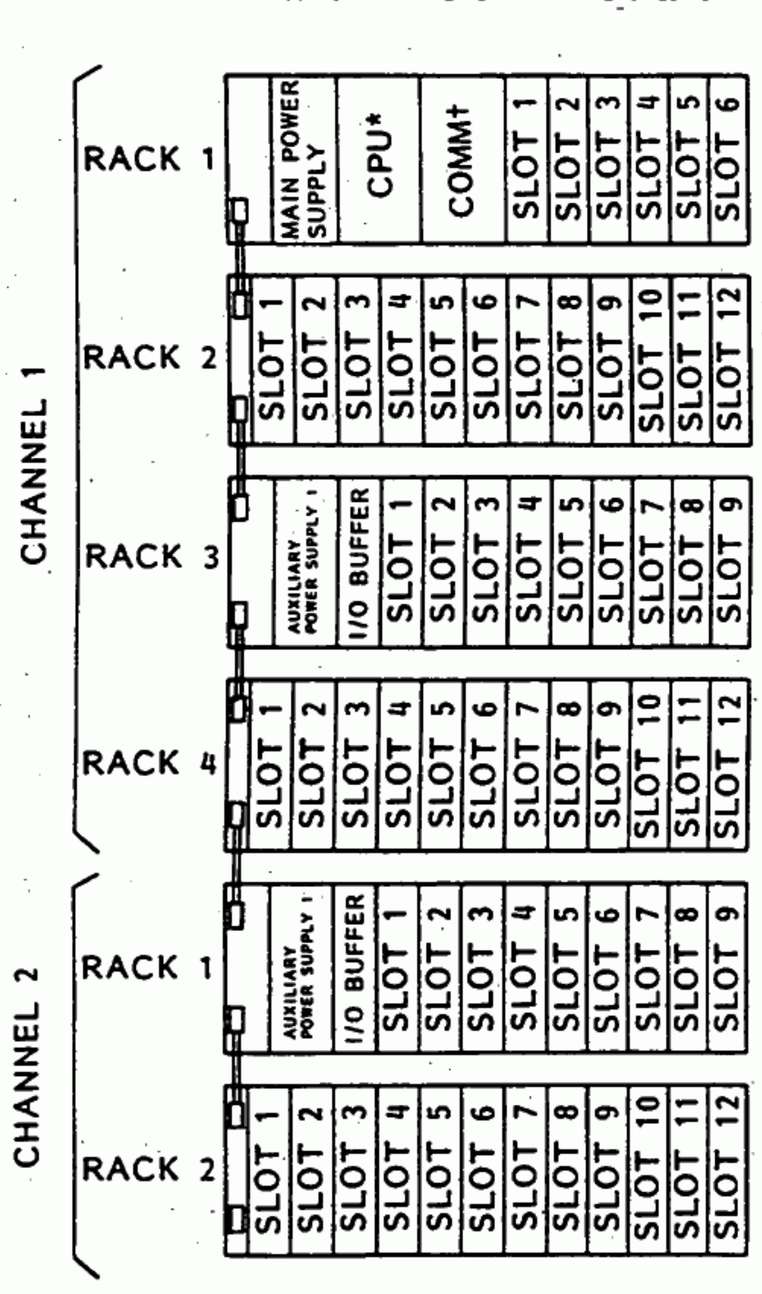
REMOTE I/O (CHANNEL 3 TO 10)



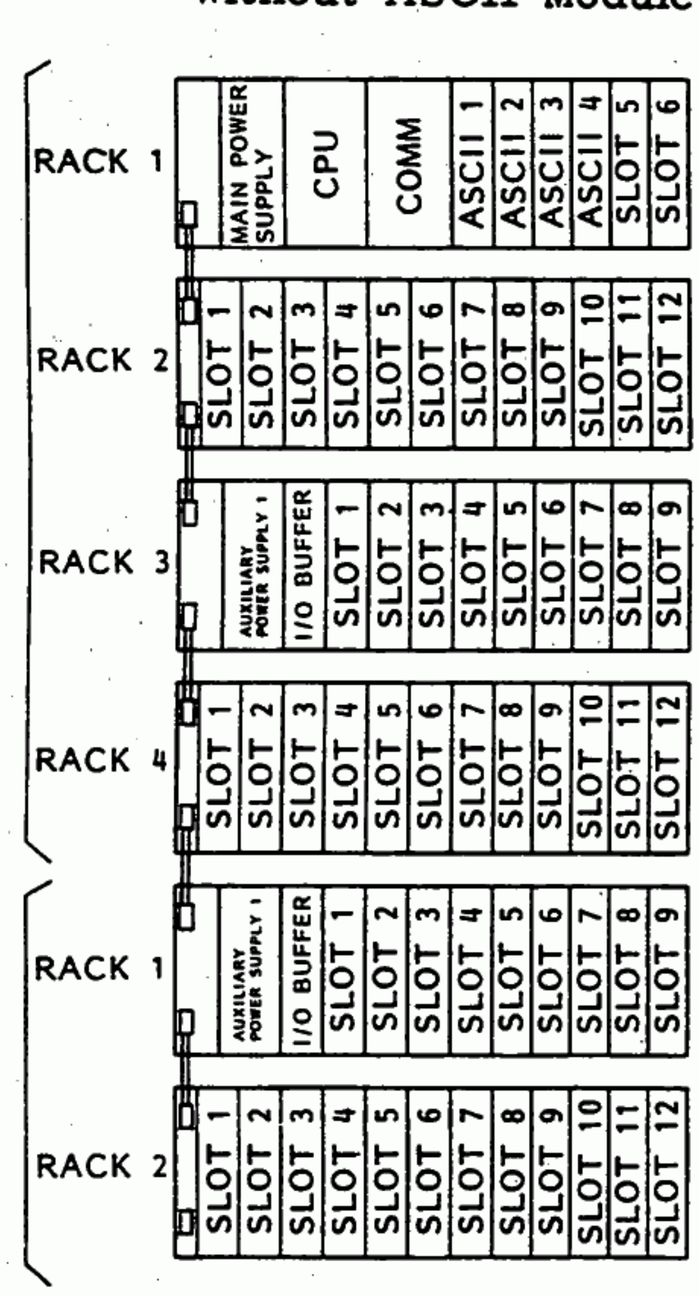
*Local I/O receiver module
†Remote I/O receiver module

Fig. 4.27 Configuration I/O Section in U84 and U84J

· With ASCII Module



· Without ASCII Module



*CPU module
†Communication module

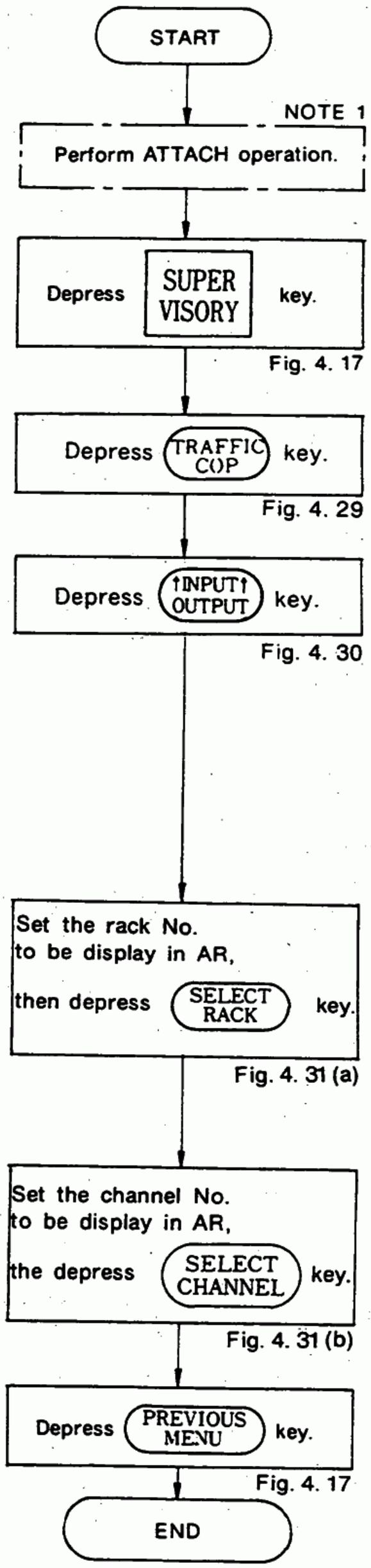
Fig. 4.28 Configuration of I/O Section in U84S

Table 4.5 Number of I/O Allocation Point

Module Name	Module Type JAMSC-		Number of Input Points			Number of Output Points		
			Discrete	BCD	Binary	Discrete	BCD	Binary
Discrete 16-Point Input Module	B1051B, B1053 B1055, B1057 B1059C		16	0	0	0	0	0
			0	1	0	0	0	0
			0	0	1	0	0	0
Discrete 32-Point Input Module	B1063, B1065		32	0	0	0	0	0
			0	2	0	0	0	0
			0	0	2	0	0	0
Discrete 64-Point Input Module	B1061		64	0	0	0	0	0
			0	4	0	0	0	0
			0	0	4	0	0	0
Resister Input Module	B1071	BCD	0	8	0	0	0	0
		Binary	0	0	8	0	0	0
Analog Input Module	B1073-1, B1073-2 B1075-1, B1075-2		0	0	4	0	0	0
Discrete 8-Point Output Module	B1094		0	0	0	8	0	0
Discrete 16-Point Output Module	B1050, B1052 B1054, B1056 B1058, B1090B		0	0	0	16	0	0
			0	0	0	0	1	0
			0	0	0	0	0	1
Discrete 32-Point Output Module	B1062, B1064		0	0	0	32	0	0
			0	0	0	0	2	0
			0	0	0	0	0	2
Discrete 64-Point Output Module	B1060		0	0	0	64	0	0
			0	0	0	0	4	0
			0	0	0	0	0	4
Resister Output Module	B1070	BCD	0	0	0	0	8	0
		Binary	0	0	0	0	0	8
Analog Output Module	B1072B-1, B1072B-2 B1072B-3, B1072B-4 B1074-1, B1074-2 B1074-3, B1074-4		0	0	0	0	0	2
Reversible Counter Module	B1081C		8	0	2	8	0	2
Preset Counter	B1082C		16	0	2	16	0	8(2)*
PID Module	B1080		8	0	2	8	0	3
Positioning Module	B1083C		16	0	4	16	0	4
Power Supply Module	B1089		0	0	0	0	0	0

*Depending on mode of B1082C.

(1) U84 I/O allocation display




```
NETWORK:00000          UNIT:001                    PROGRAM MODE
                       CHANNEL:01      RACK:1
* INPUT *
              DISCRETE                          REGISTER
SLOT      REF #      POINTS      REF #      BCD      BINARY
  1       -----      ---         30001      08       --
  2       -----      ---         30009      --       08
  3       10001      016         -----      --       --
  4       10017      032         -----      --       --
  5       -----      ---         -----      --       --
  6       -----      ---         -----      --       --
  7       -----      ---         -----      --       --
  8       -----      ---         -----      --       --
  9       -----      ---         -----      --       --

AVAIL:24575   USED:00001   TRACE:00000   AR:00000        SET SEARCH
[1 SELECT CHANNEL] [2 SELECT RACK] [3↑INPUT↑ OUTPUT] [4] [5] [6] [7PREVIOUS MENU] [8 NEXT MENU]
```

Fig. 4.29

```
NETWORK:00000          UNIT:001                    PROGRAM MODE
                       CHANNEL:01      RACK:1
* OUTPUT *
              DISCRETE                          REGISTER
SLOT      REF #      POINTS      REF #      BCD      BINARY
  1       -----      ---         -----      --       --
  2       -----      ---         -----      --       --
  3       -----      ---         -----      --       --
  4       -----      ---         -----      --       --
  5       -----      ---         40001      08       --
  6       -----      ---         40009      --       08
  7       00001      016         -----      --       --
  8       00017      016         -----      --       --
  9       00033      016         -----      --       --
```

Fig. 4.30

```
NETWORK:00000          UNIT:001                    PROGRAM MODE
                       CHANNEL:01      RACK:2
* OUTPUT *
              DISCRETE                          REGISTER
SLOT      REF #      POINTS      REF #      BCD      BINARY
  1       00049      008         40017      --       02
  2       00057      016         40019      --       08
  3       -----      ---         -----      --       --
  4       00073      016         40027      --       04
  5       00089      008         40031      --       03
  6       -----      ---         -----      --       --
  7       -----      ---         -----      --       --
  8       -----      ---         -----      --       --
  9       -----      ---         -----      --       --
 10       -----      ---         -----      --       --
 11       -----      ---         -----      --       --
 12       -----      ---         -----      --       --
```

Fig. 4.31 (a)

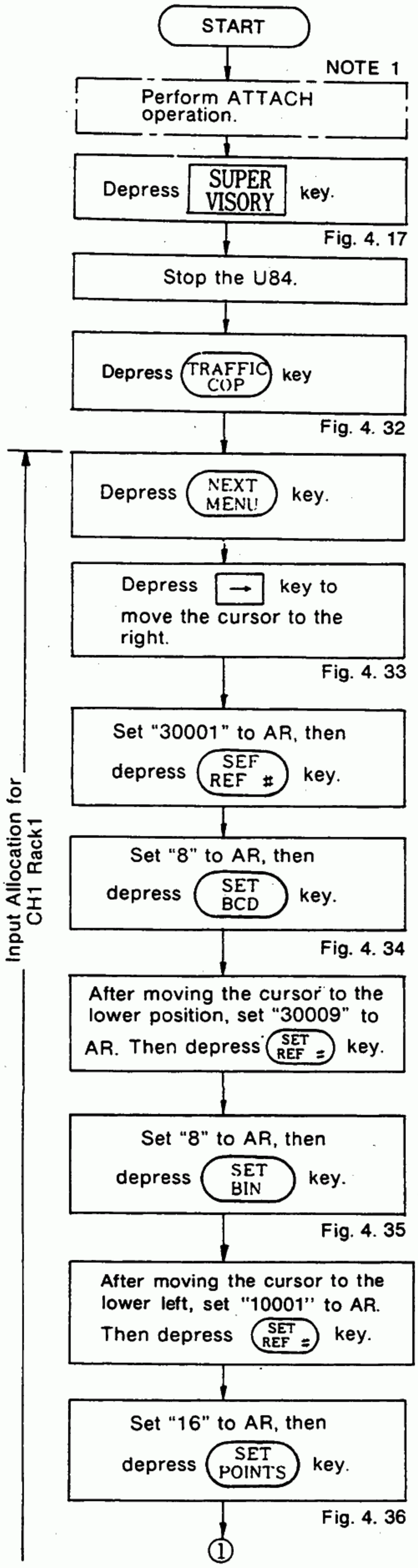
```
NETWORK:00000          UNIT:001                    PROGRAM MODE
                       CHANNEL:02      RACK:2
* OUTPUT *
              DISCRETE                          REGISTER
SLOT      REF #      POINTS      REF #      BCD      BINARY
  1       -----      ---         40001      08       --
  2       -----      ---         40009      --       08
  3       00001      016         -----      --       --
  4       00017      032         -----      --       --
  5       -----      ---         -----      --       --
  6       -----      ---         -----      --       --
  7       -----      ---         -----      --       --
  8       -----      ---         -----      --       --
  9       -----      ---         -----      --       --
```

Fig. 4.31 (b)

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. When TRAFFIC COP key is depressed, I/O display of rack 1 in channel 1 will appear.

(2) U84 I/O allocation storing



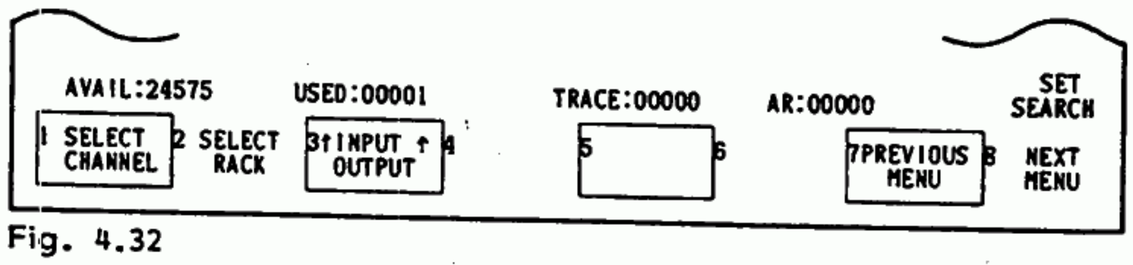


Fig. 4.32

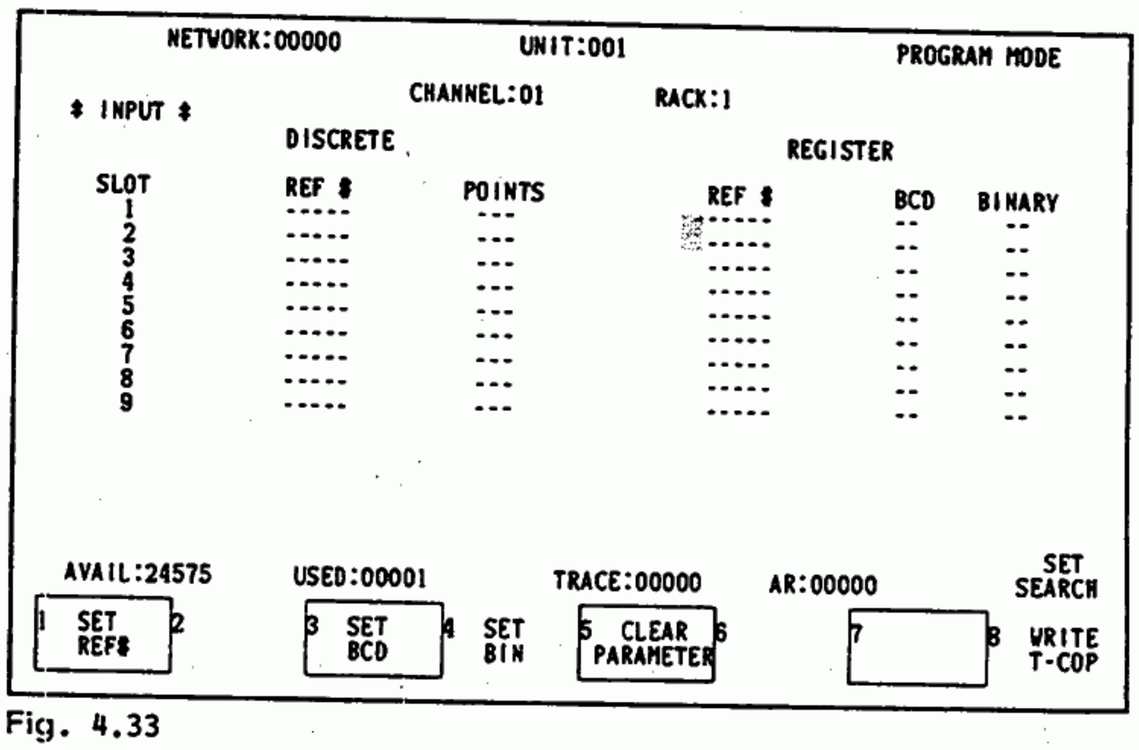


Fig. 4.33

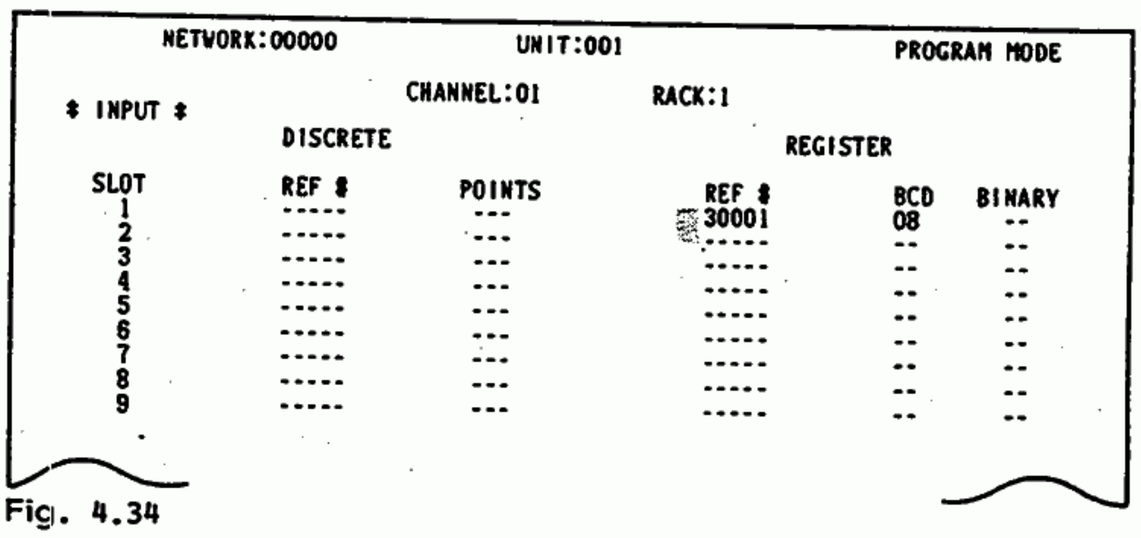


Fig. 4.34

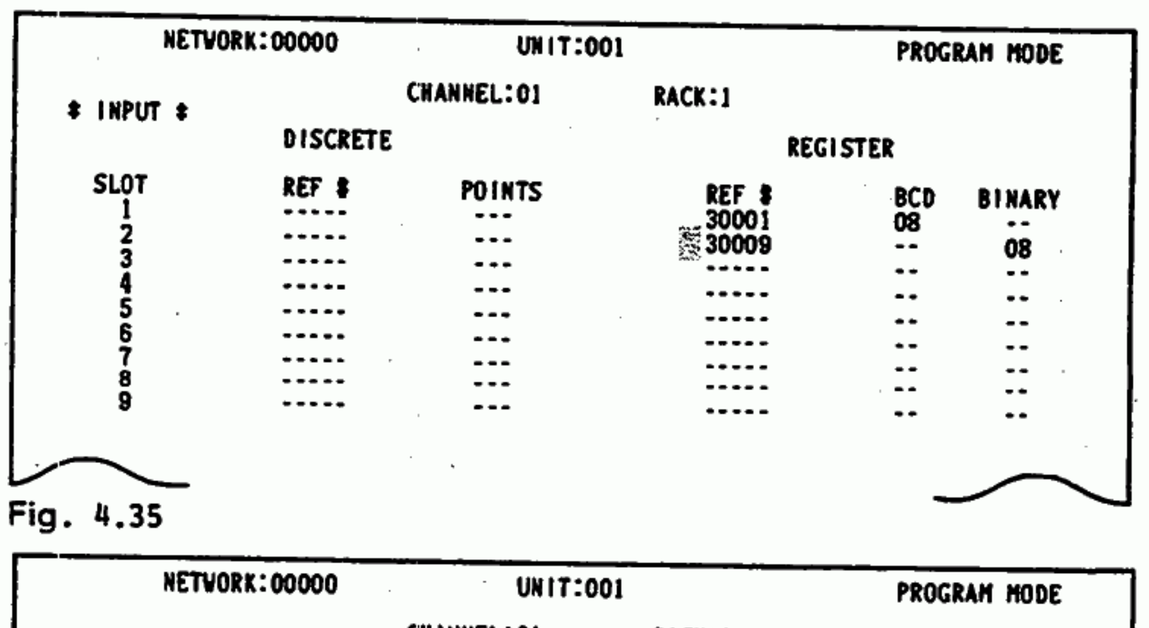


Fig. 4.35

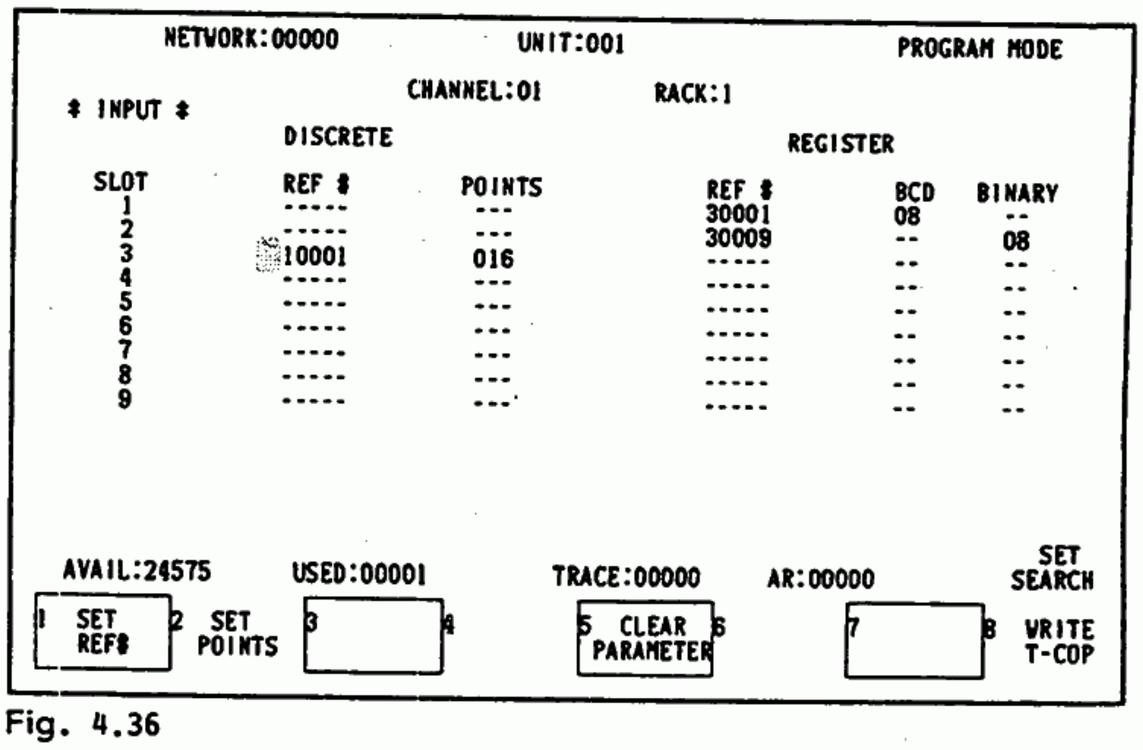
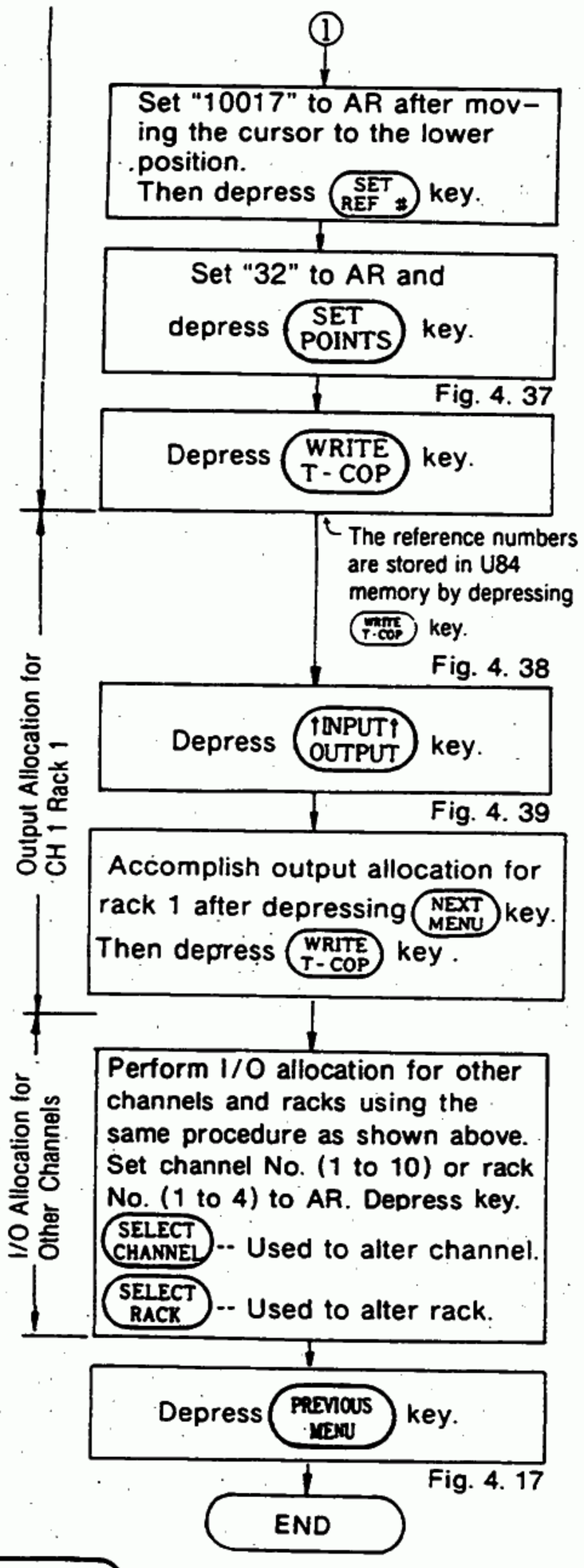


Fig. 4.36

(2) U84 I/O allocation storing (Cont'd)



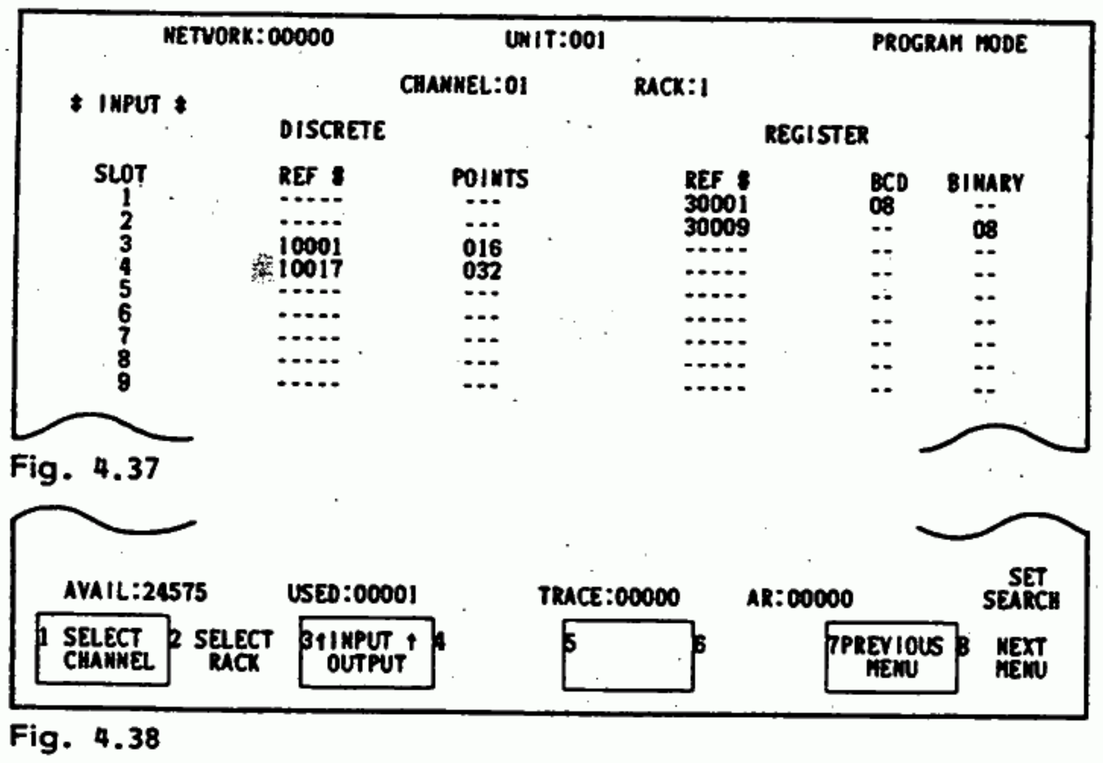


Fig. 4.37

Fig. 4.38

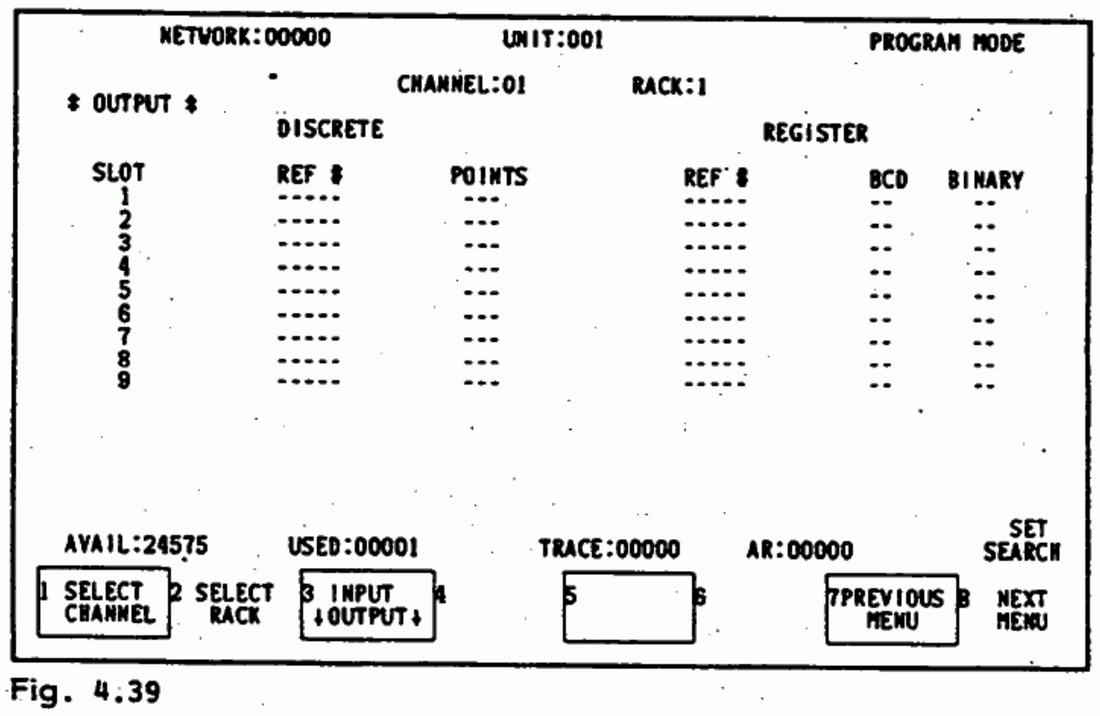


Fig. 4.39

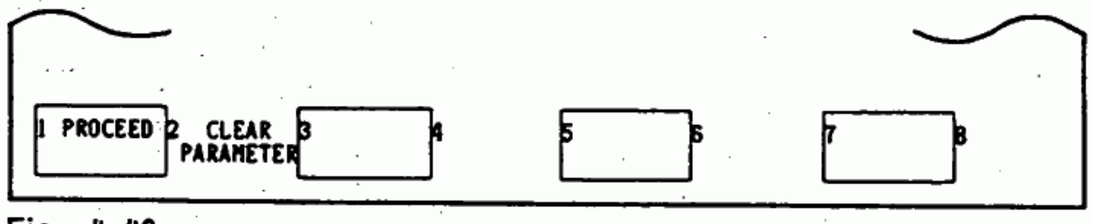


Fig. 4.40

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.

2. Label (NEXT MENU) is not displayed in monitor mode.

3. Depressing (CLEAR PARAMETER) key clears the allocation at the cursor position.

4. If the reference number used in another slot is set, the following message is displayed.
   " ** CAUTION: REFERENCE MULTIPLY IN TRAFFIC COP ** "
   If its setting is OK, depress (PROCEED) key; if not, depress (CLEAR PARAMETER) key. (Fig. 4.40)

5. When (WRITE T-TOP) key is depressed without setting of discrete or register numbers, the following message is displayed.
   "SPECIFY REF# PARAMETER"
   Set the numbers and depress (WRITE T-COP) key.

4.5.6 LOADER OPERATION

This operation is for load, (write-in), save (read out) and verify programs with the U84 unit. Prepare data disk.

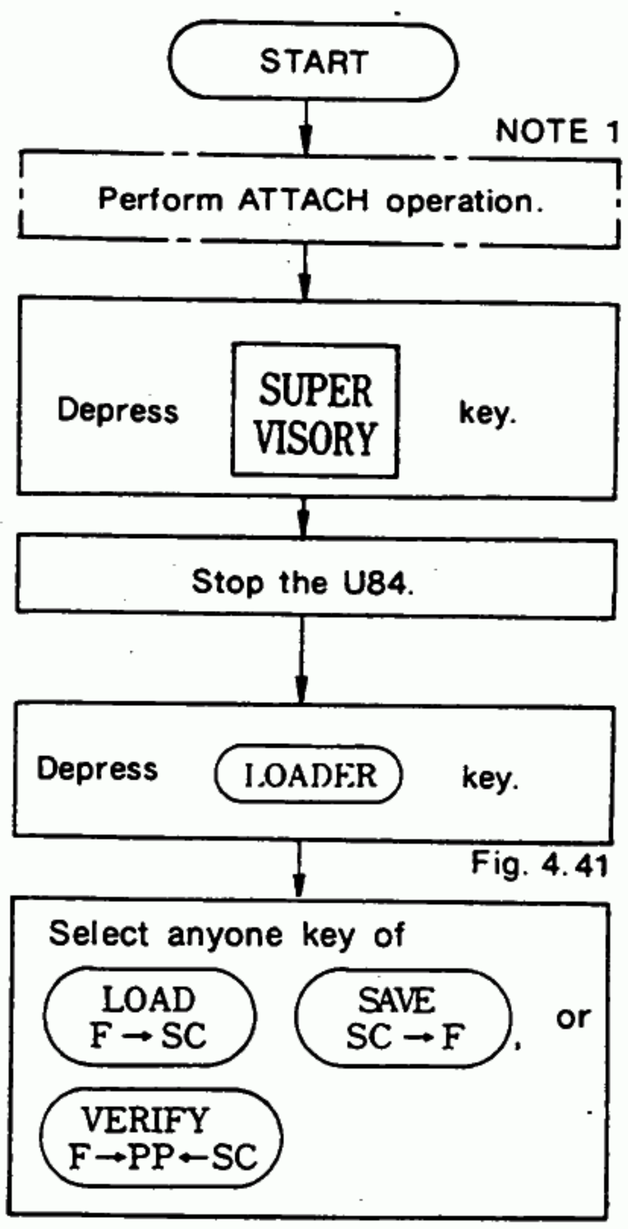


Fig. 4.41

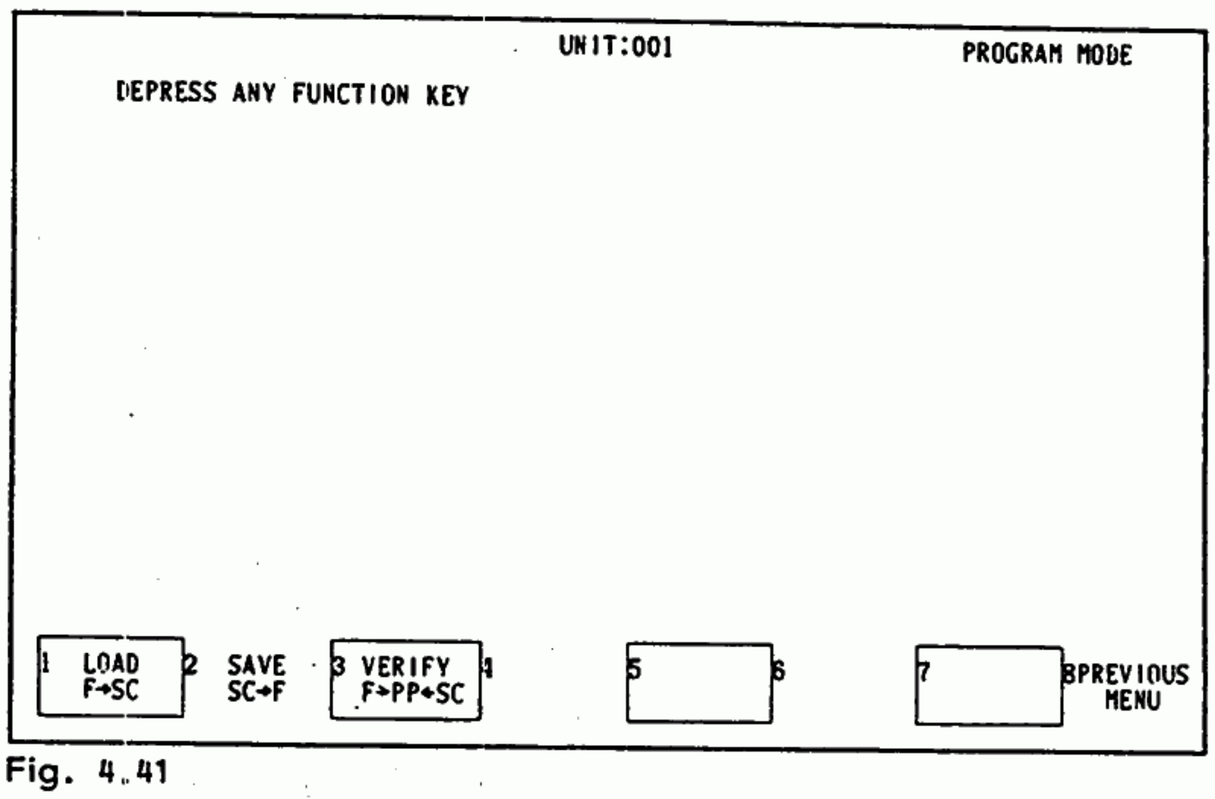


Fig. 4.41

LOAD F→SC .... U84 unit ← FD load operation

SAVE SC→F .... U84 unit → FD save operation

LOAD F→SC .... U84 unit ← → FD verify operation

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Label (LOAD F → SC) is not displayed in monitor mode.
3. Depressing (PREVIOUS MENU) key returns to the display shown in Fig. 4.17.
4. For operation of disk files, refer to Par. 4.8 "FILE MANAGEMENT OPERATION."

IMPORTANT

The data disk can not be used unless initialized (made usable with P150). For initialization, refer to the disk initialization under par. 4.8.2 "DISK OPERATION." Blank disks (Model: F150-000) are in the initialized state as delivered.

(1) U84 → FD SAVE OPERATION

The memory contents of U84 can be saved on a data disk by the following operation.

When ladder programs have been stored, save the stored programs on a disk. If the programs are destroyed, this disk can be used to restore them by loading.

POINT · Making the data disk ready for writing.

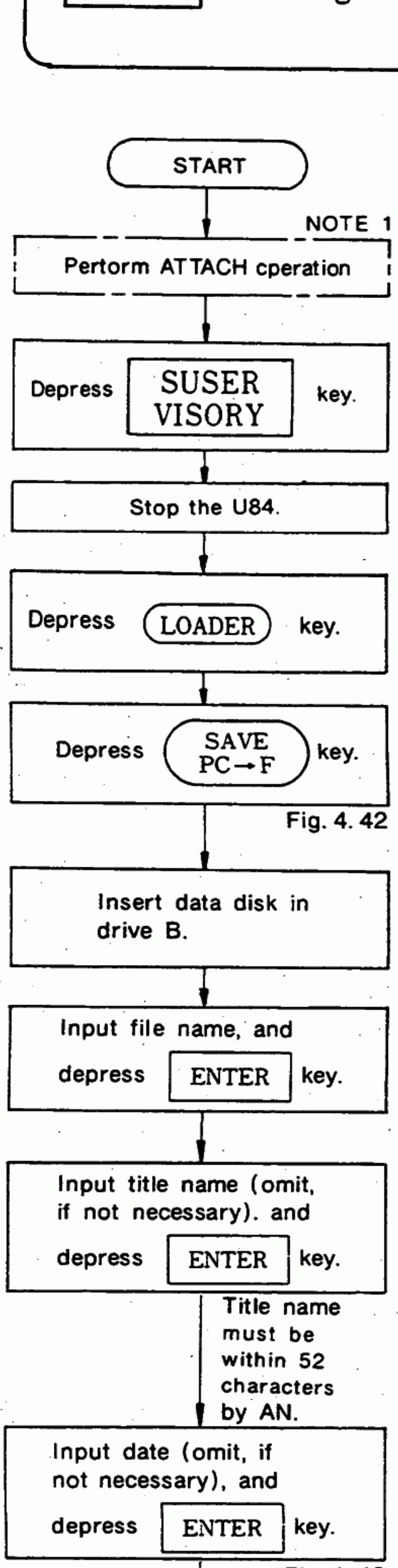


Fig. 4.42

Fig. 4.43

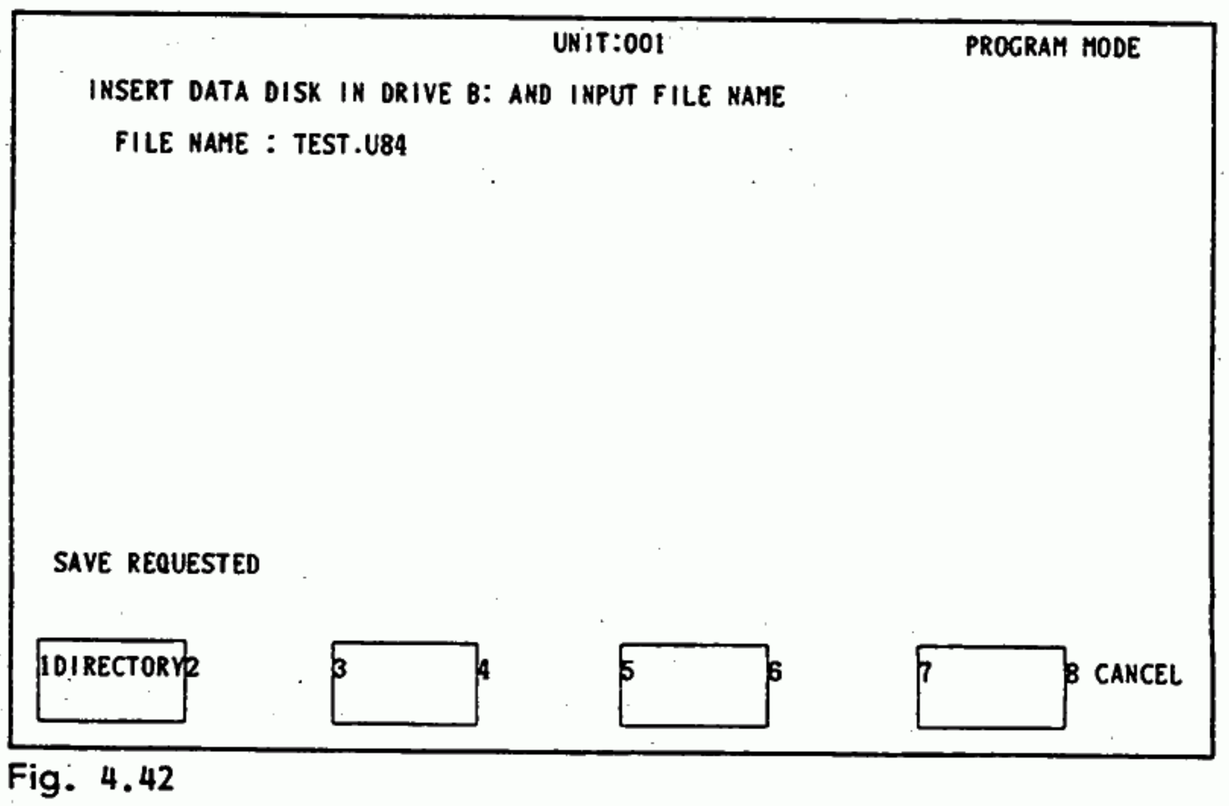


Fig. 4.42

POINT

File name is within 8 characters by ANK.
Escape character is within 3 characters.
Refer to par. 4.8.3 (1).

TESTLDR1 . U84

FILE NAME ESCAPE CHARACTER

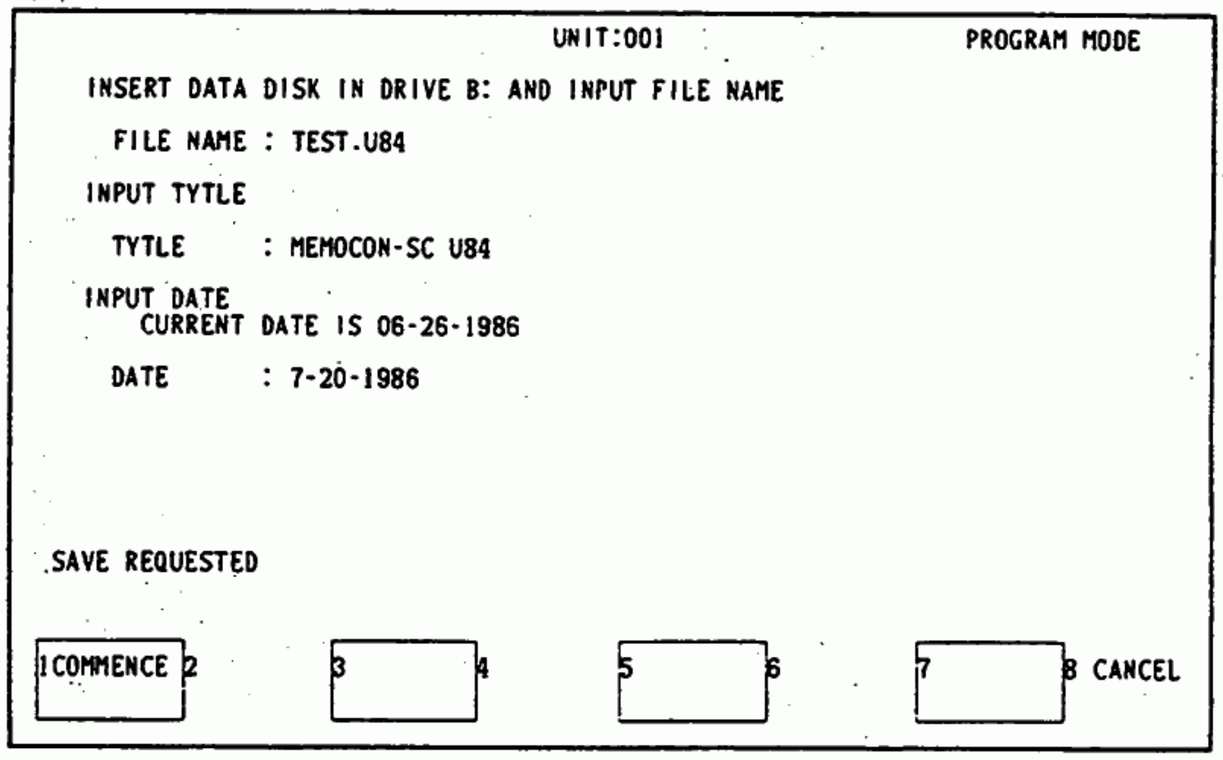
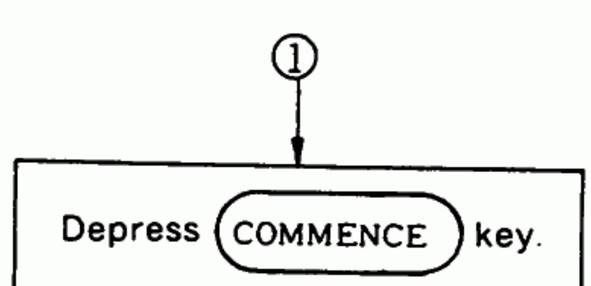


Fig. 4.43



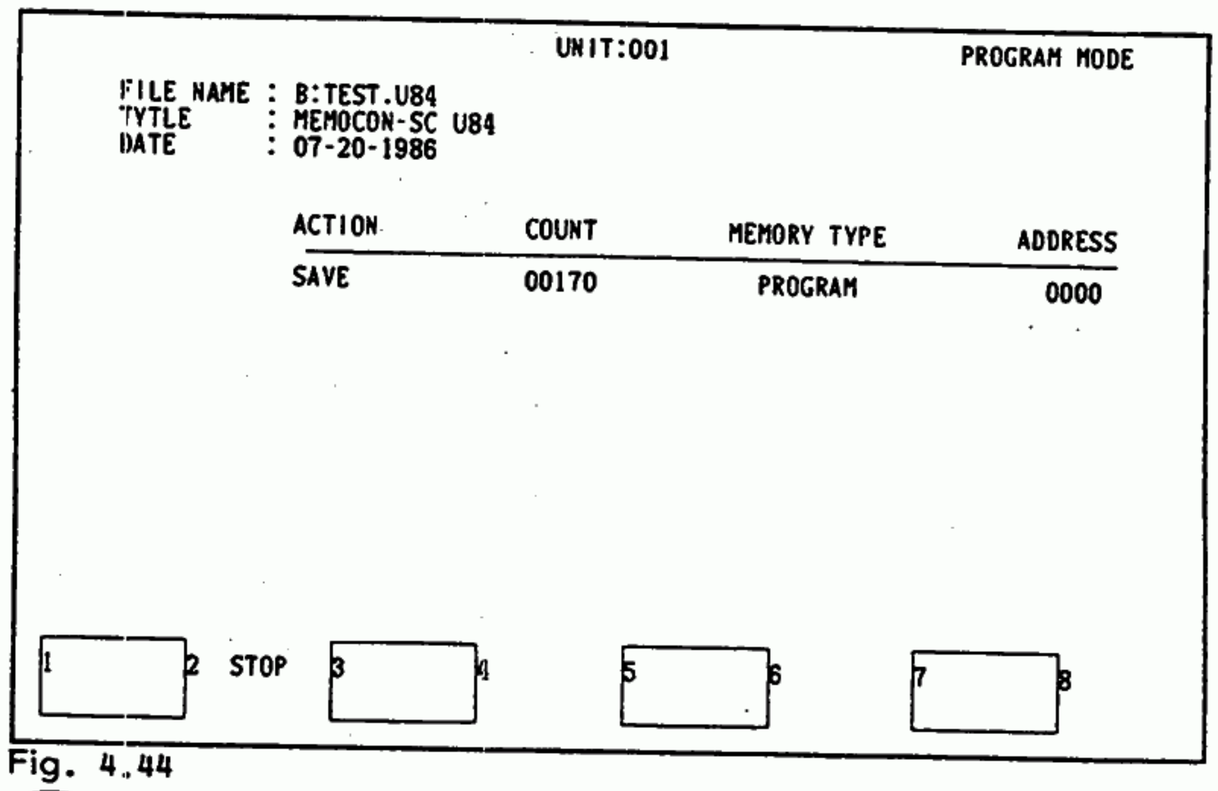


Fig. 4.44

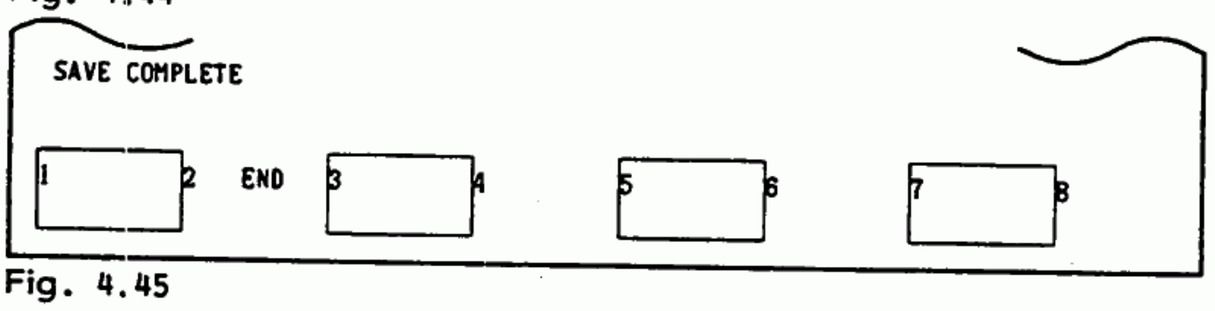


Fig. 4.45

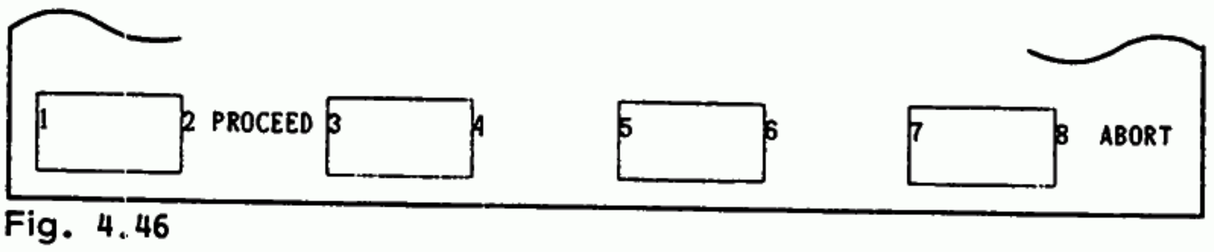


Fig. 4.46

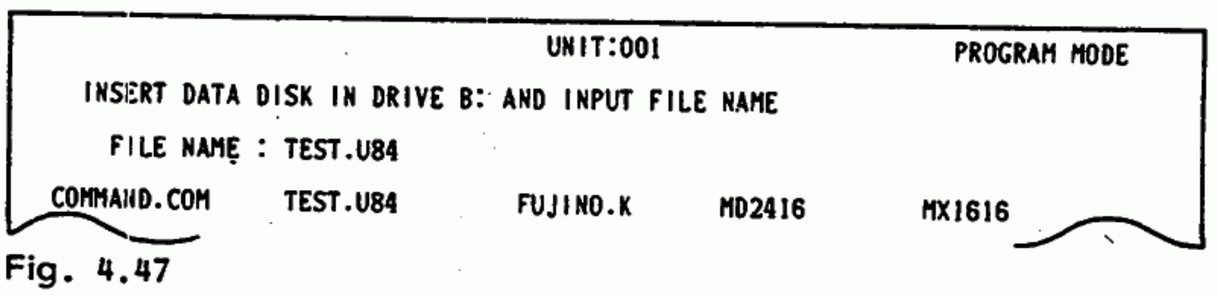


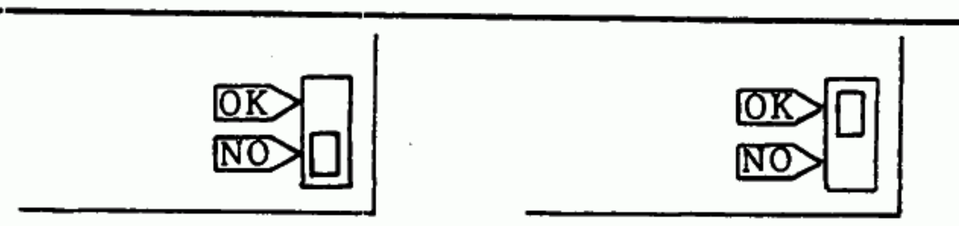
Fig. 4.47

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Depressing (DIRECTORY) key displays the file names. (Fig. 4.47)
3. Depressing (CANCEL) key restores the state shown in Fig. 4.41.
4. To stop the save process during save execution, depress (STOP) key (Fig. 4.44). The labels shown in Fig. 4.46 are displayed. Depressing (PROCEED) key causes the saving process to resume, and depressing (ABORT) key returns to the display shown in Fig. 4.41.
5. Date can be input in the form "7-20-86" or "7/20/86" in addition to the example shown in Fig. 4.43.
6. Save operation can be executed also while U84 is running. However, execution of verify operation causes a miscomparison.

IMPORTANT

Make the data disk writable state beforehand.



(a) Writable state (2) Write disable state

(2) U84 ← FD LOAD OPERATION

Programs saved on disks can be written into U84. This operation is used to write completed ladder programs into on other U84 for utilization, and to restore destroyed programs. Even when programs are saved from a 24 K words U84 onto a disk, if the memory is below 16 K words, they can be written into a 16 K words U84.

POINT

- Stop the U84 before starting this operation.

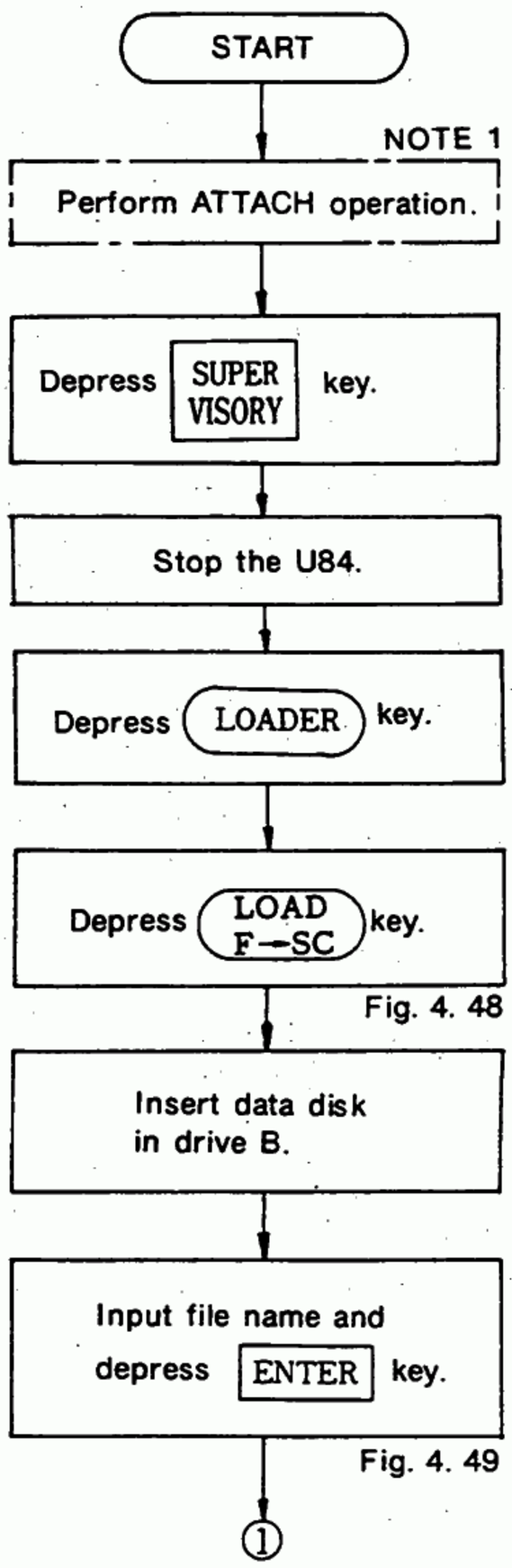


Fig. 4. 48

Fig. 4. 49

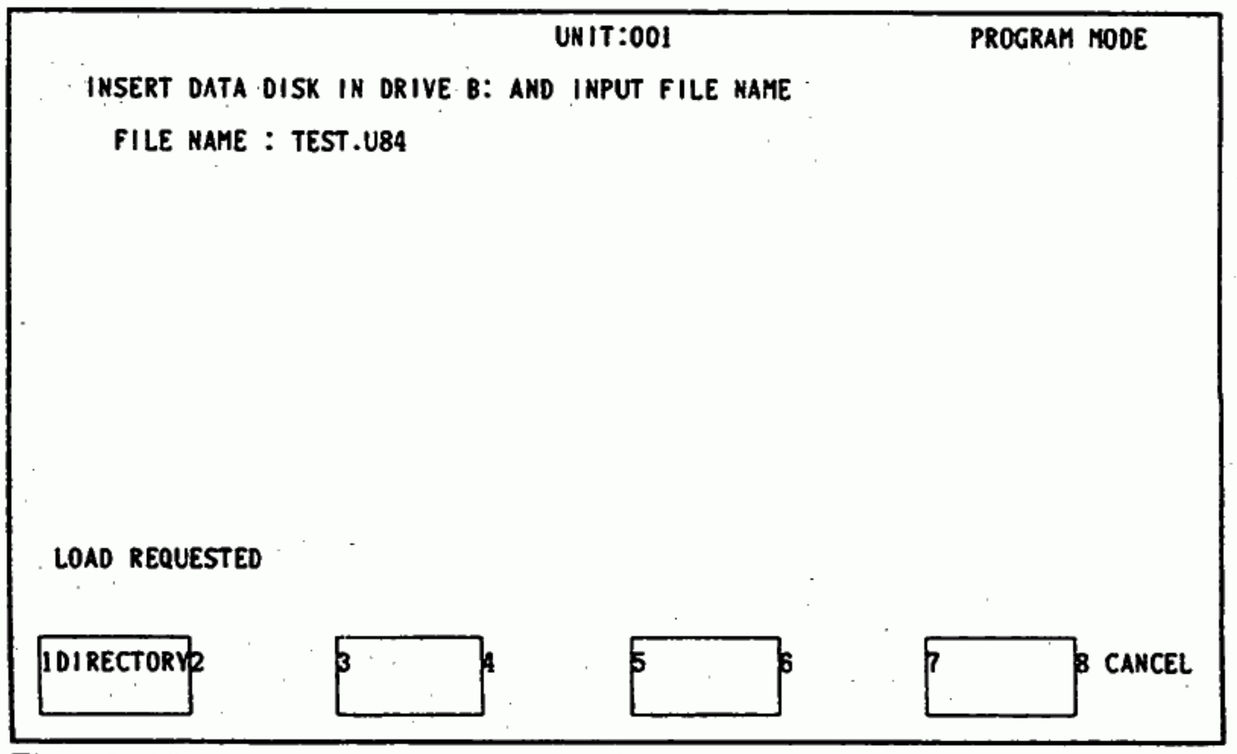


Fig. 4.48

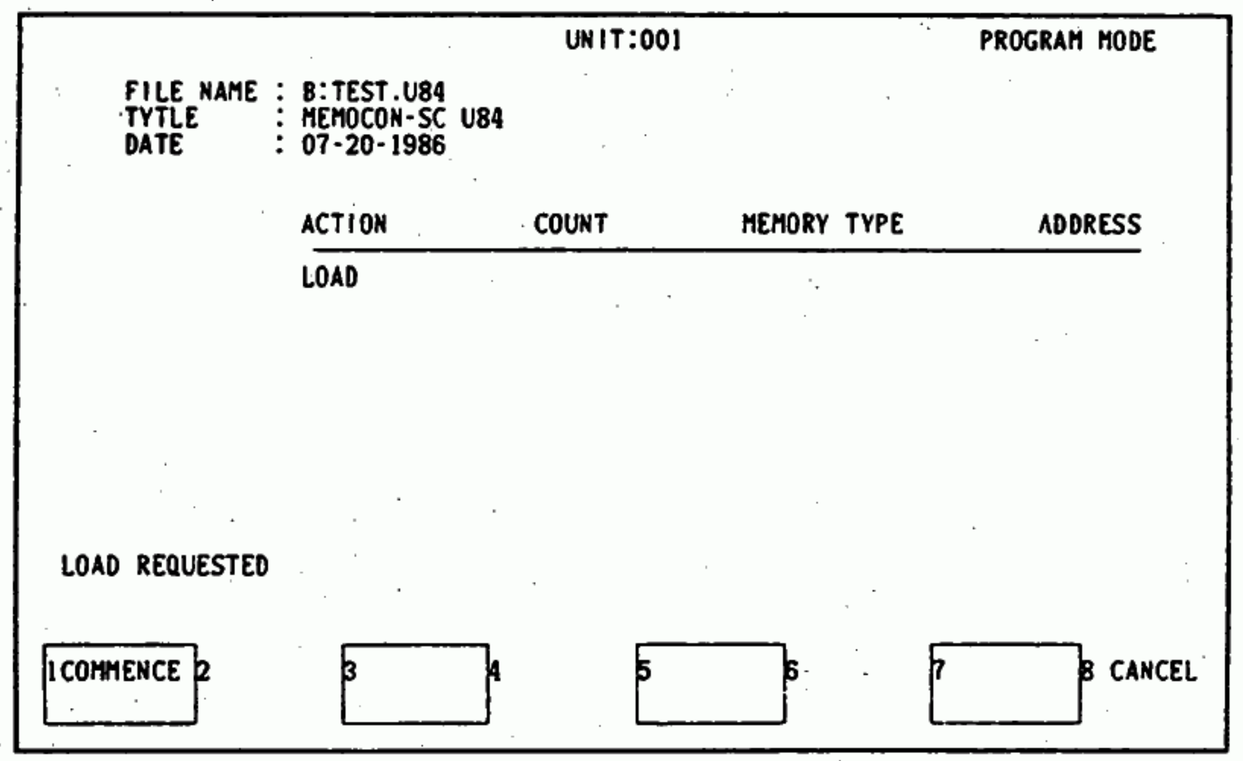
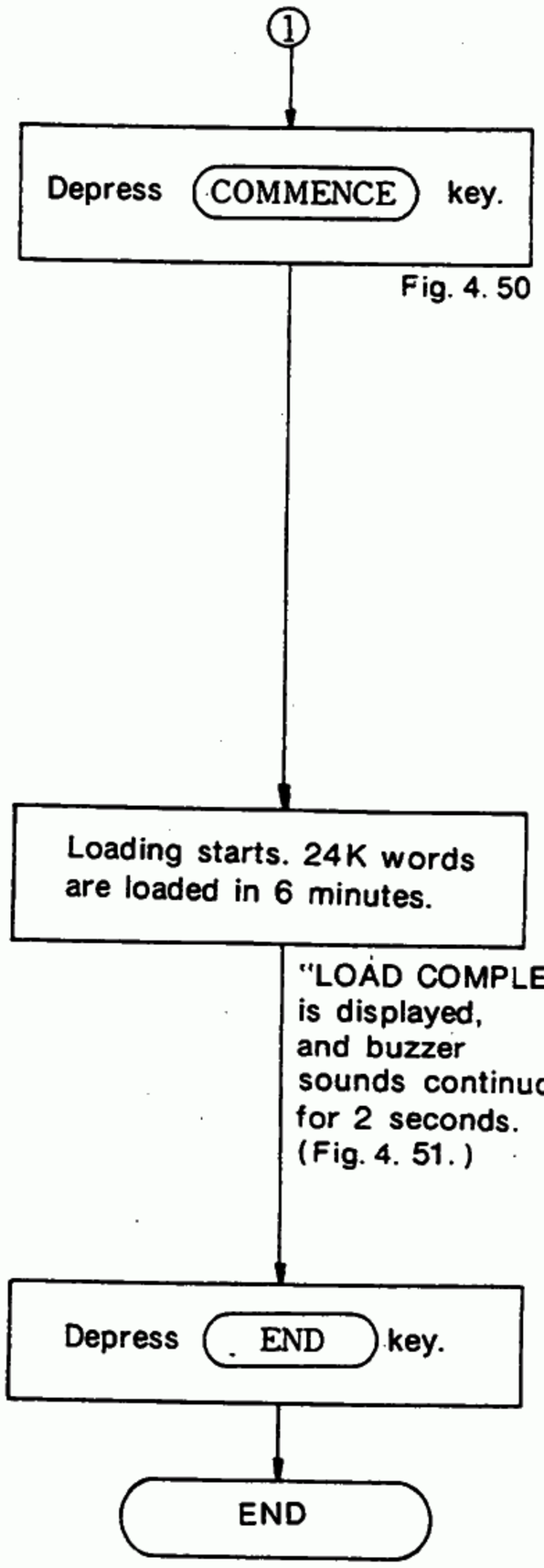


Fig. 4.49



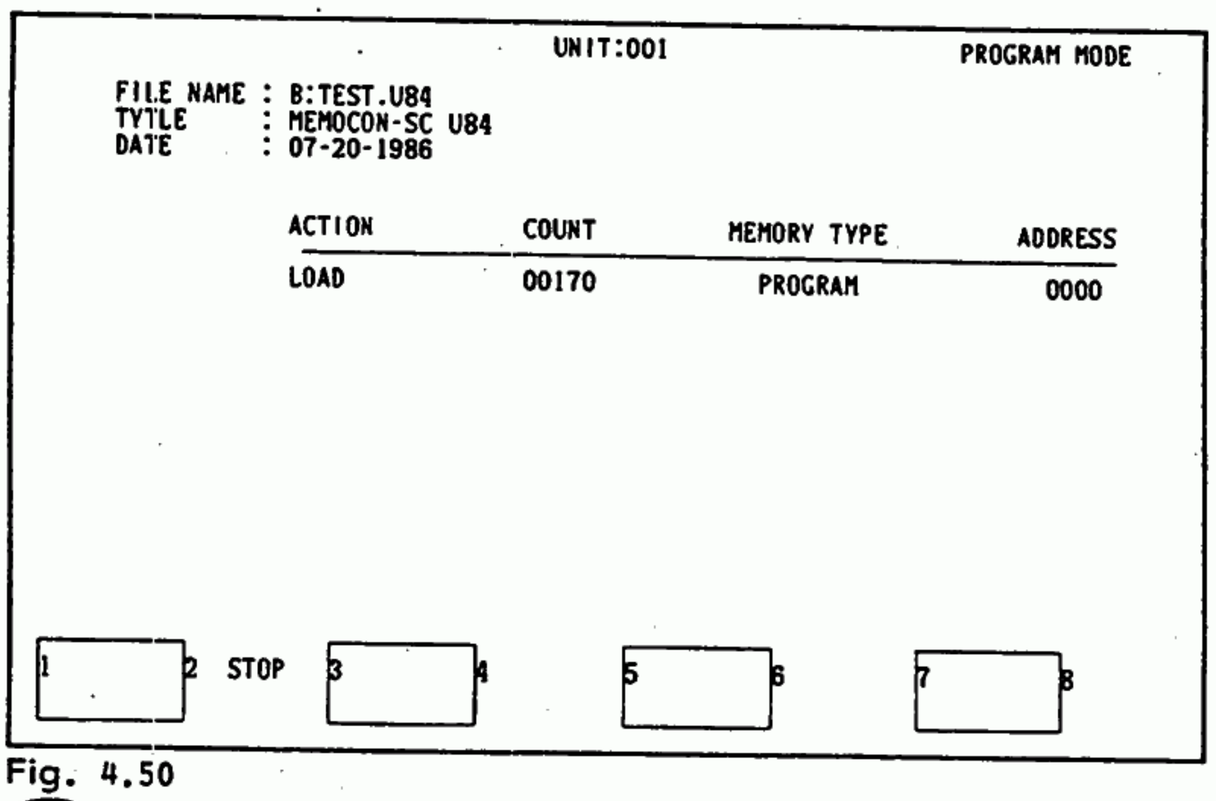


Fig. 4.50

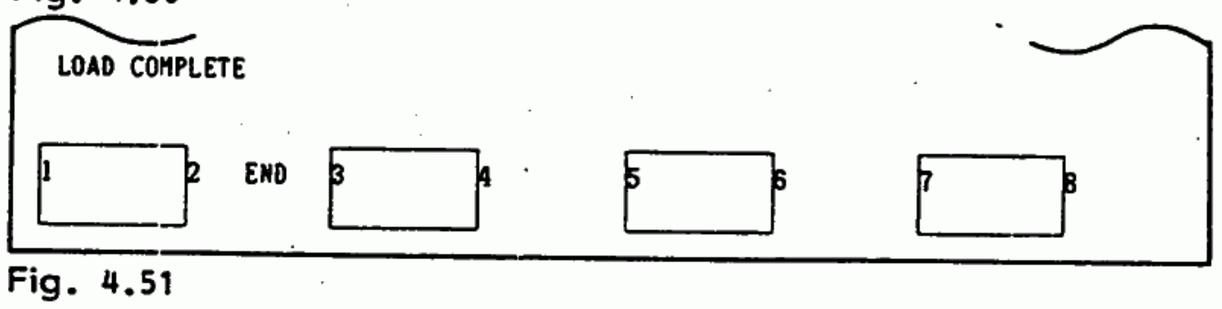


Fig. 4.51

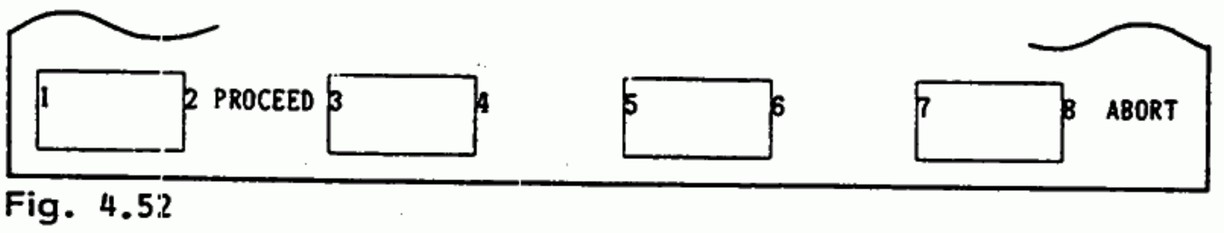


Fig. 4.52

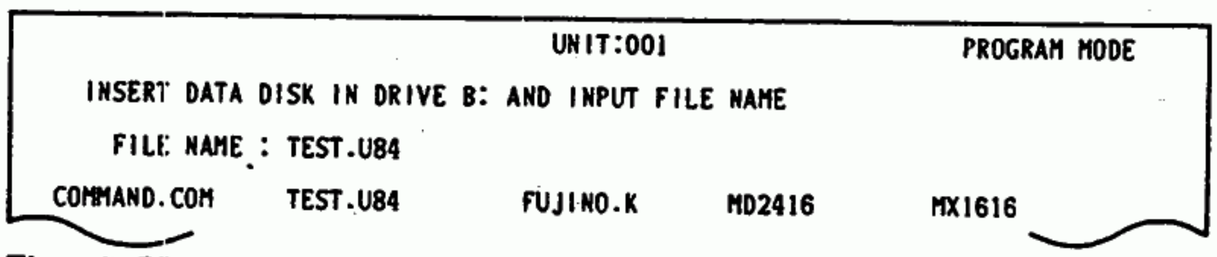


Fig. 4.53

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Depressing (DIRECTORY) key displays the file names (Fig. 4.53).
3. Depressing (CANCEL) key restores the state shown in Fig. 4.41
4. To stop the loading during execution, depress (STOP) key (Fig. 4.50). The labels shown in Fig. 4.52 are displayed. Depressing (PROCEED) key causes the loading to resume, and depressing (ABORT) key returns to the display shown in Fig. 4.41.

(3) U84 ⟷ FD VERIFY OPERATION

This operation is used for verification of floppy disk contents and U84 memory contents.

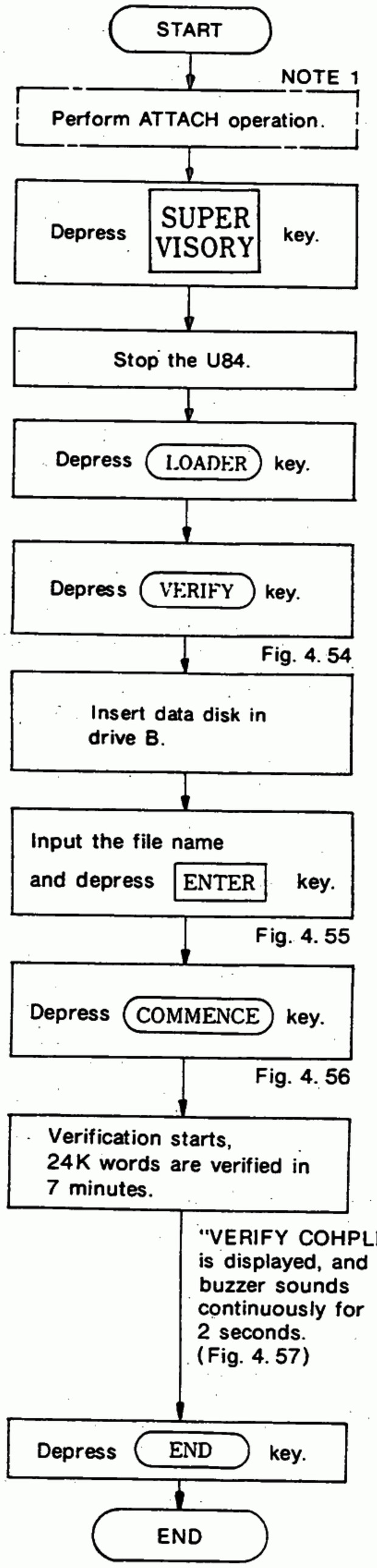


Fig. 4.54

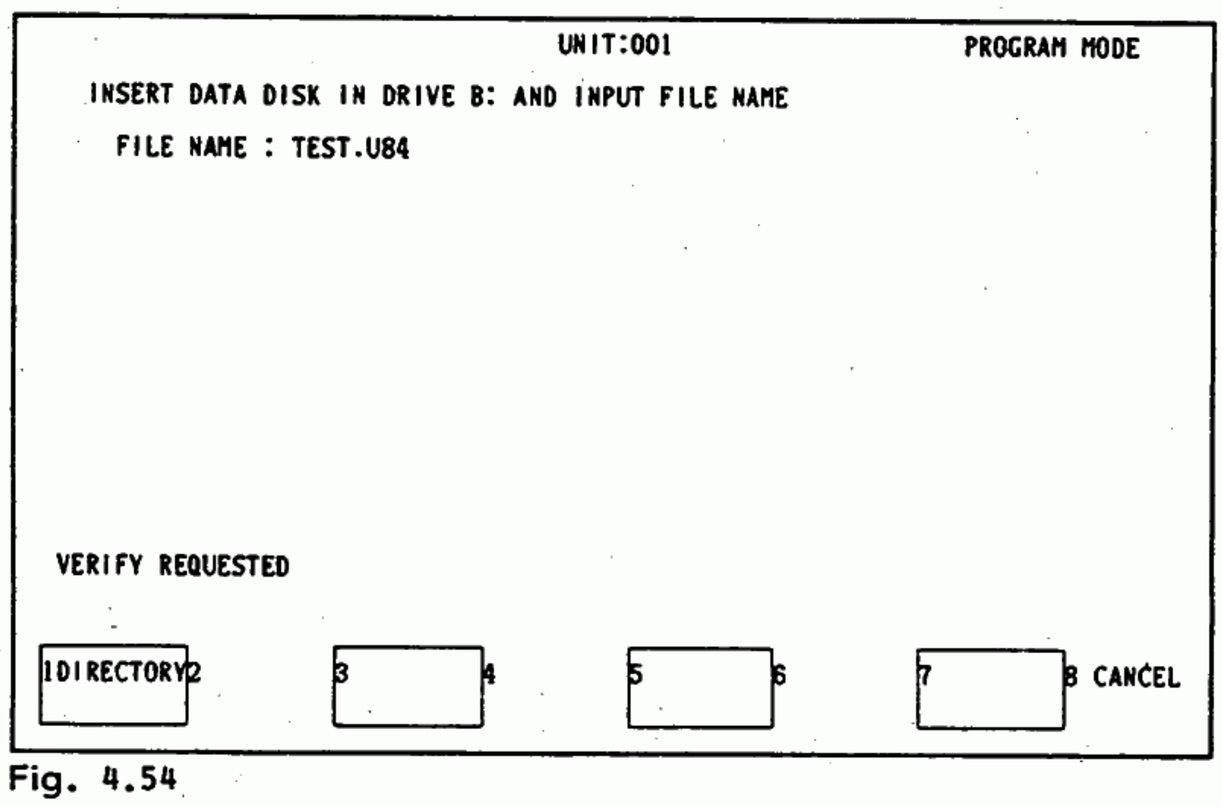


Fig. 4.54

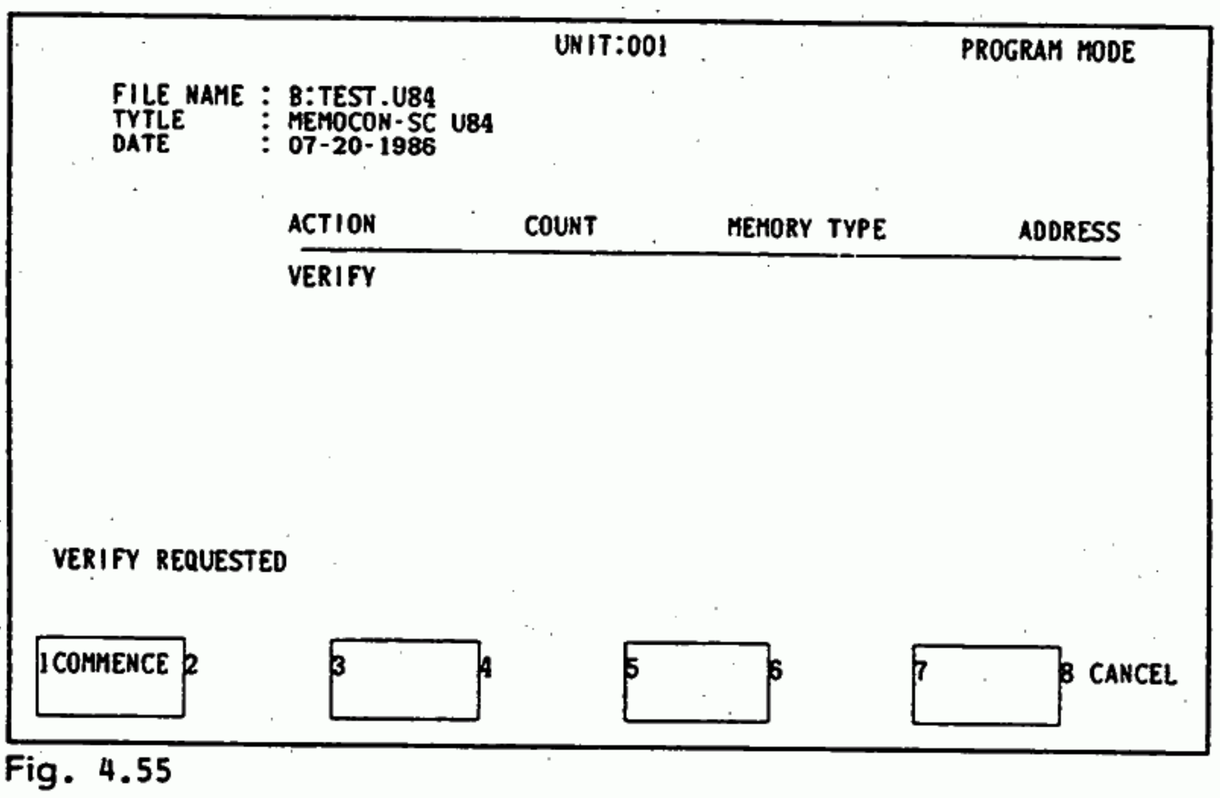


Fig. 4.55

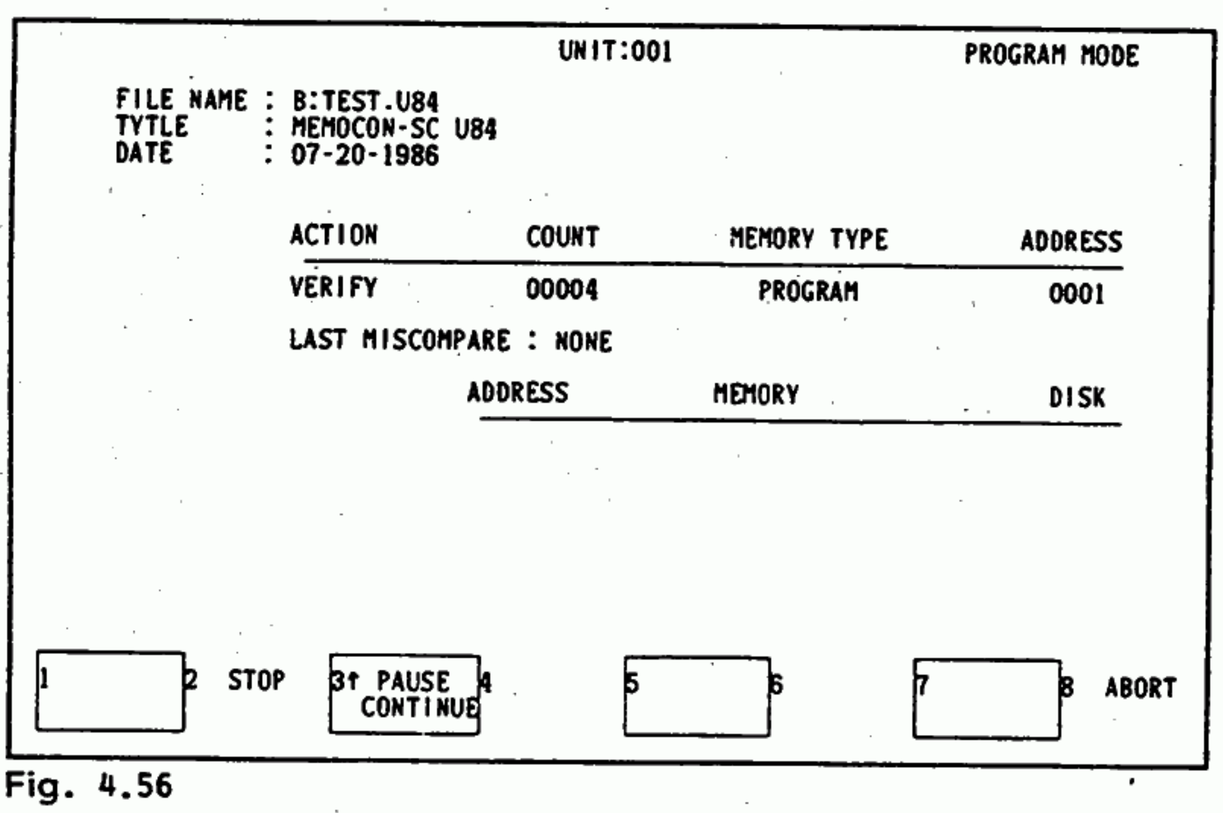


Fig. 4.56

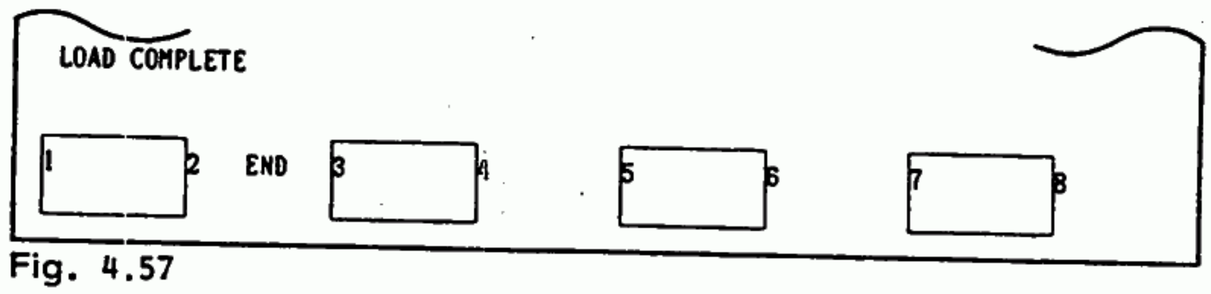


Fig. 4.57

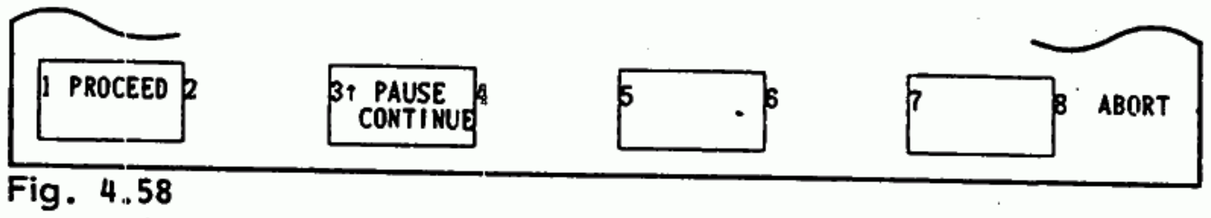


Fig. 4.58

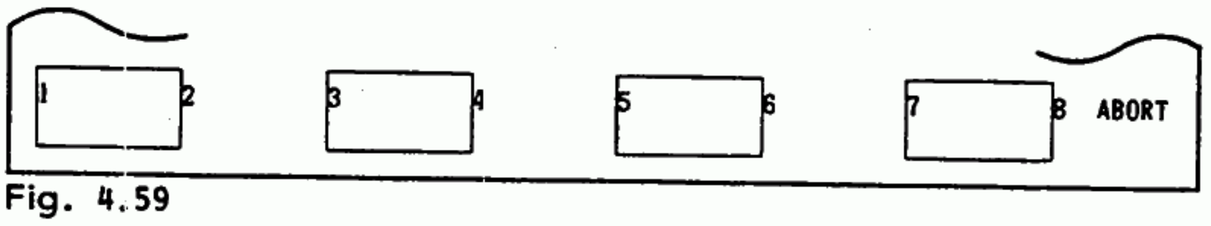


Fig. 4.59

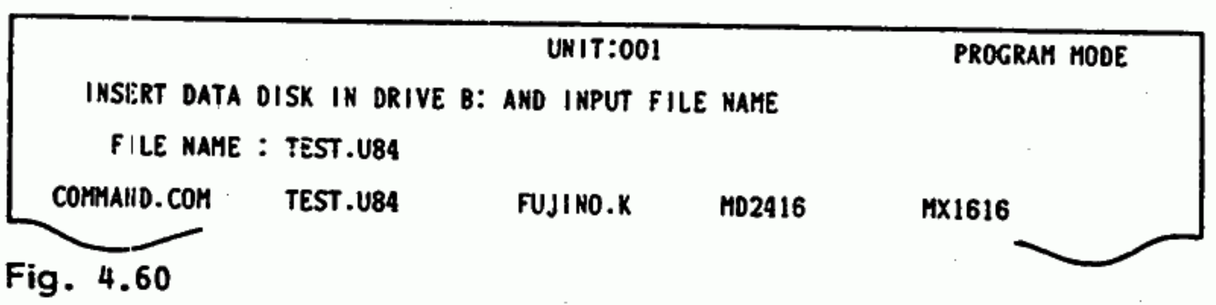


Fig. 4.60

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Depressing (DIRECTORY) key displays the file names (Fig. 4.60).
3. Depressing (CANCEL) key restores the state shown in Fig. 4.41.
4. If an obvious miscomparison (difference between the program size and U84 memory capacity) is found during the verifying process, the label shown in Fig. 4.59 is displayed, and the buzzer sounds intermittently for 10 seconds. Depressing (ABORT) key returns the static shown in Fig. 4.41.
5. When miscomparison other than the one listed in 4 above, are found during the verifying process, the label shown in Fig. 4.58 is displayed.

   Depressing (PROCEED) key causes the verifying process to continue and depressing (ABORT) key returns the state shown in Fig. 4.41.

   If the major errors* in comparison occurs, the buzzer sounds intermittently for 10 seconds. Interrupt the verifying process, and restart from the SAVE operation.
6. Even when miscomparison (as in 4 above) are present, when label display (↑PAUSE↑ CONTINUE) is changed for (PAUSE ↓CONTINUE↓) by (↑PAUSE↑ CONTINUE) key depression, the verify process continues execution to the end. In this case, for example, "0023 MISCOMPARE: VERIFY COMPLETE" is displayed in the message area.

*The major errors in comparison may occur in the following areas:
- LOGIC area (Ladder diagrams stored)
- TRAFFIC COP area (I/O allocation stored)
- SYSTEM area

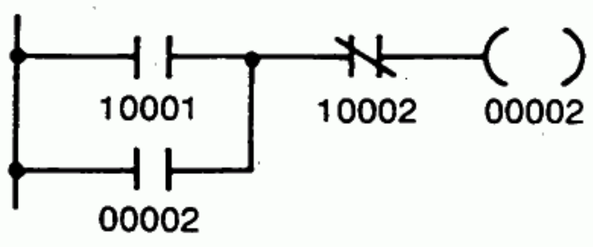
4. 6 PROGRAMMING AND MONITOR OPERATION

4.6.1 NETWORK STORING

PROGRAM MODE

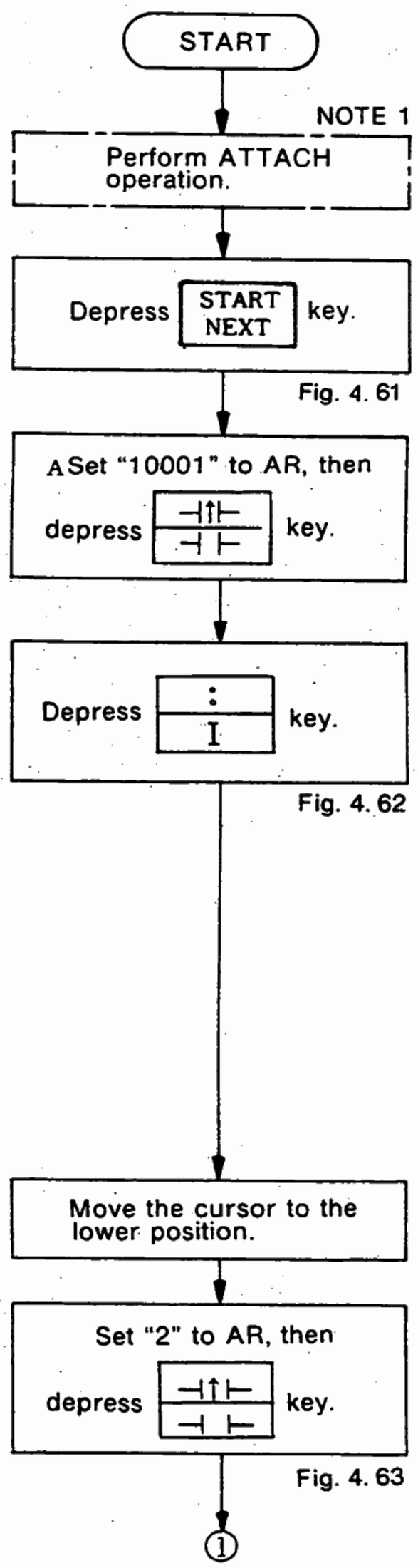
(1) RELAY, COIL ①

Sample Relay Logic



POINT

- Any logic coil (output or internal) can be used as a coil only once; however, references to contacts controlled by that coil can be used as many times as required.
- The cursor should be placed in the logic area.



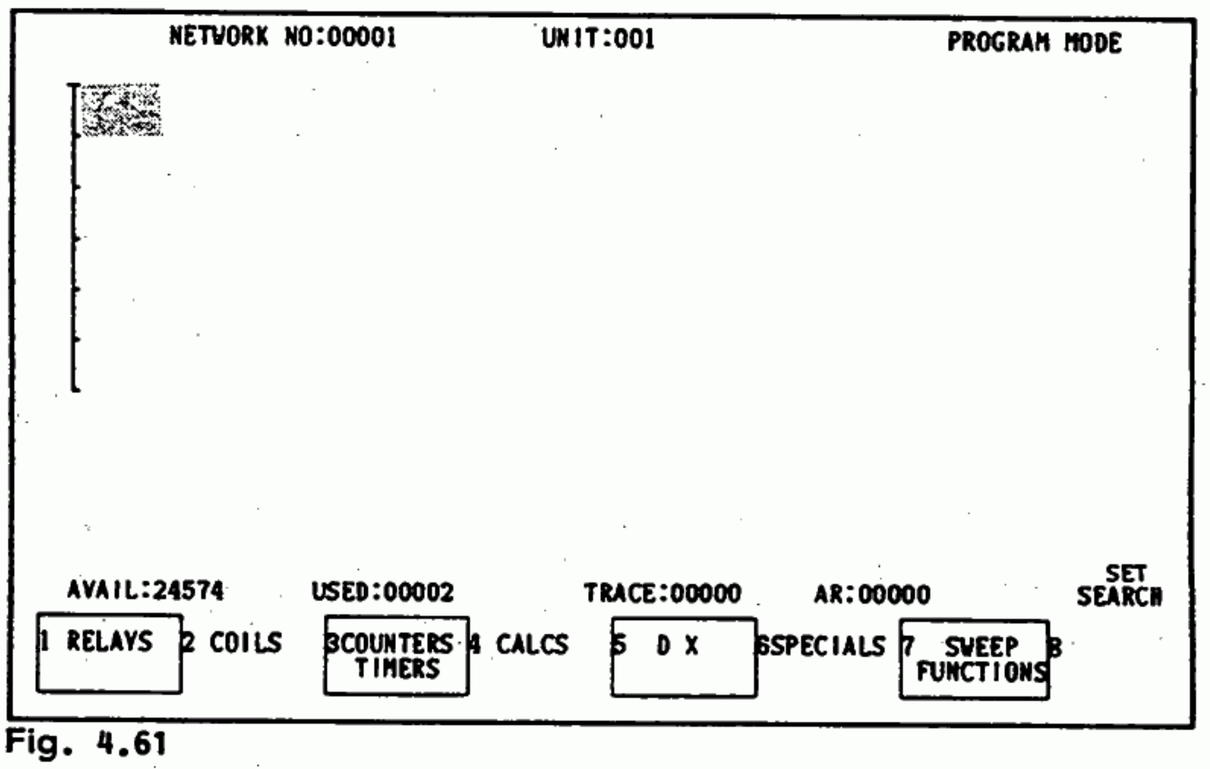


Fig. 4.61

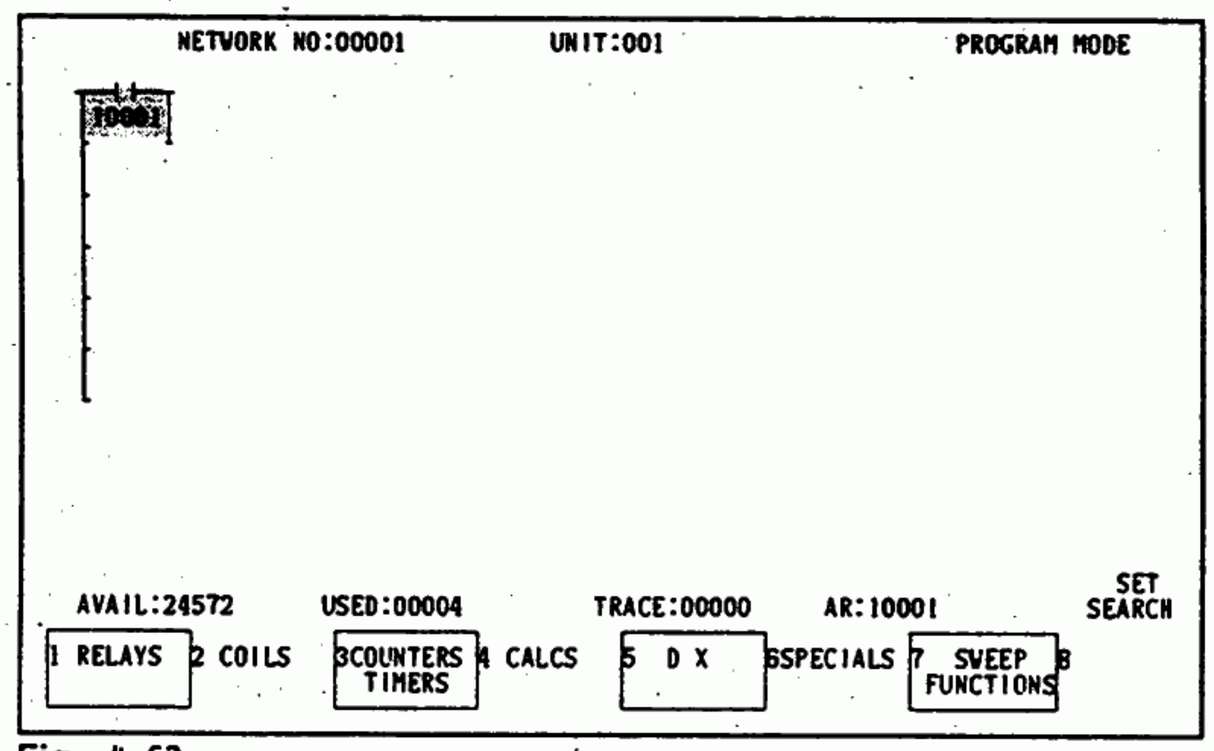


Fig. 4.62

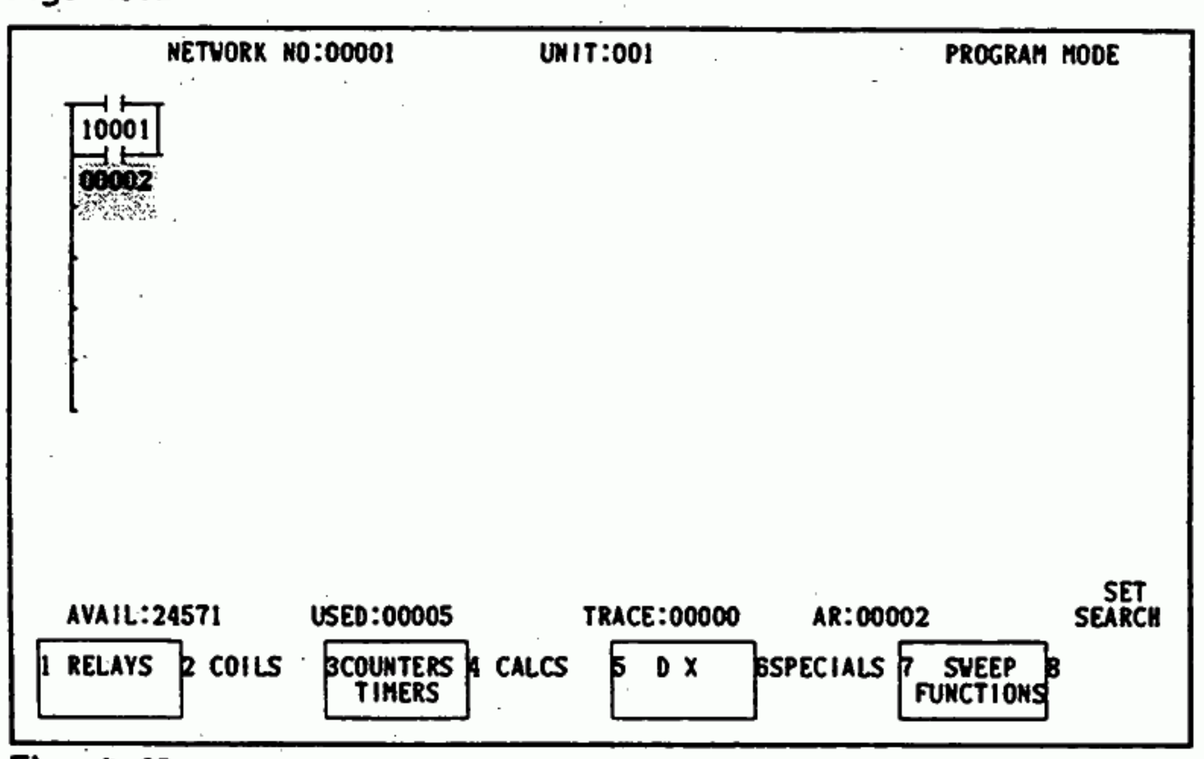


Fig. 4.63

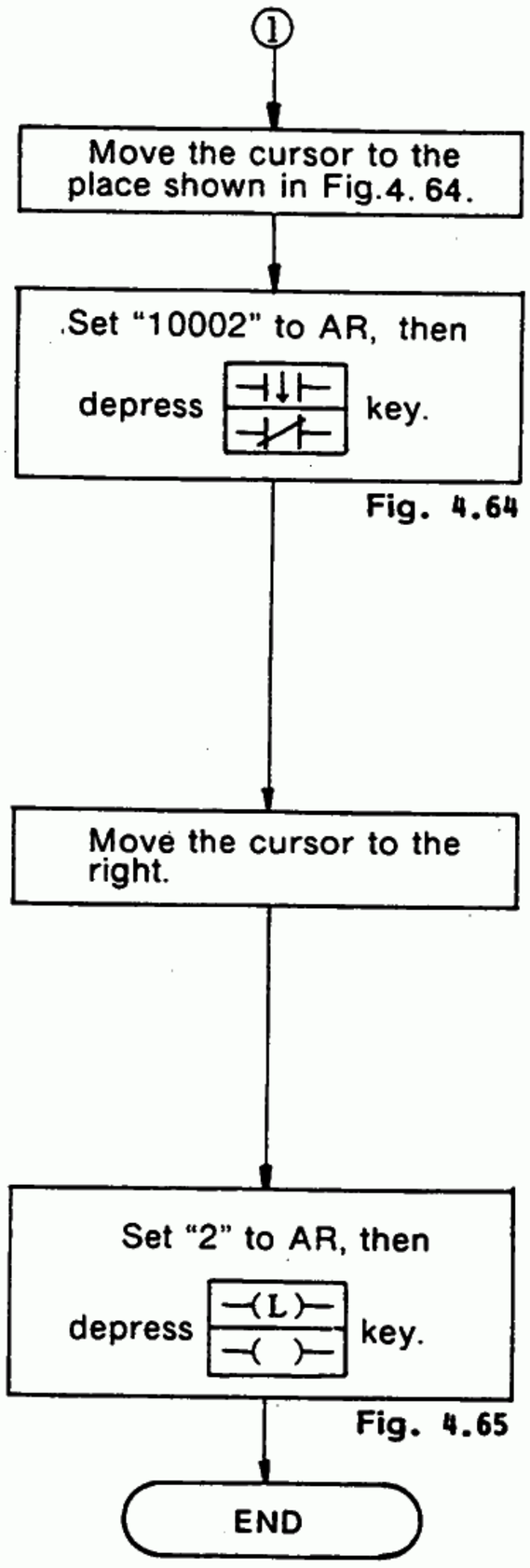


Fig. 4.64

Fig. 4.65

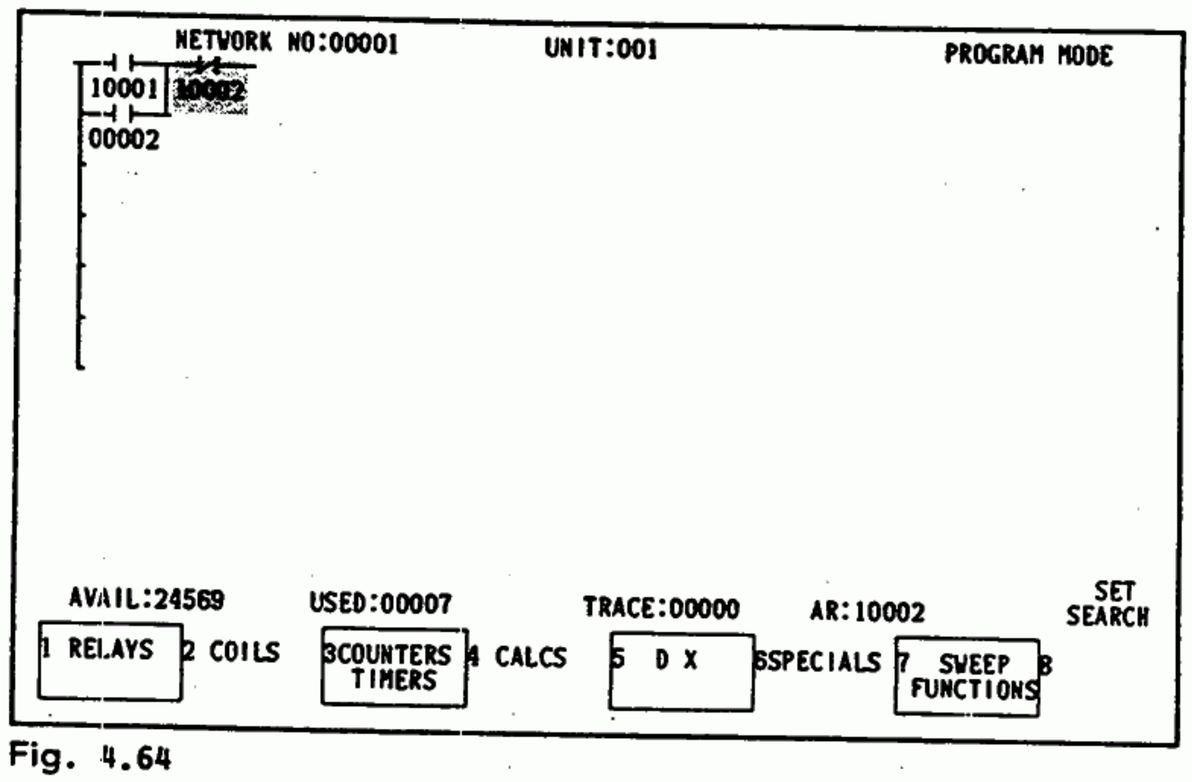


Fig. 4.64

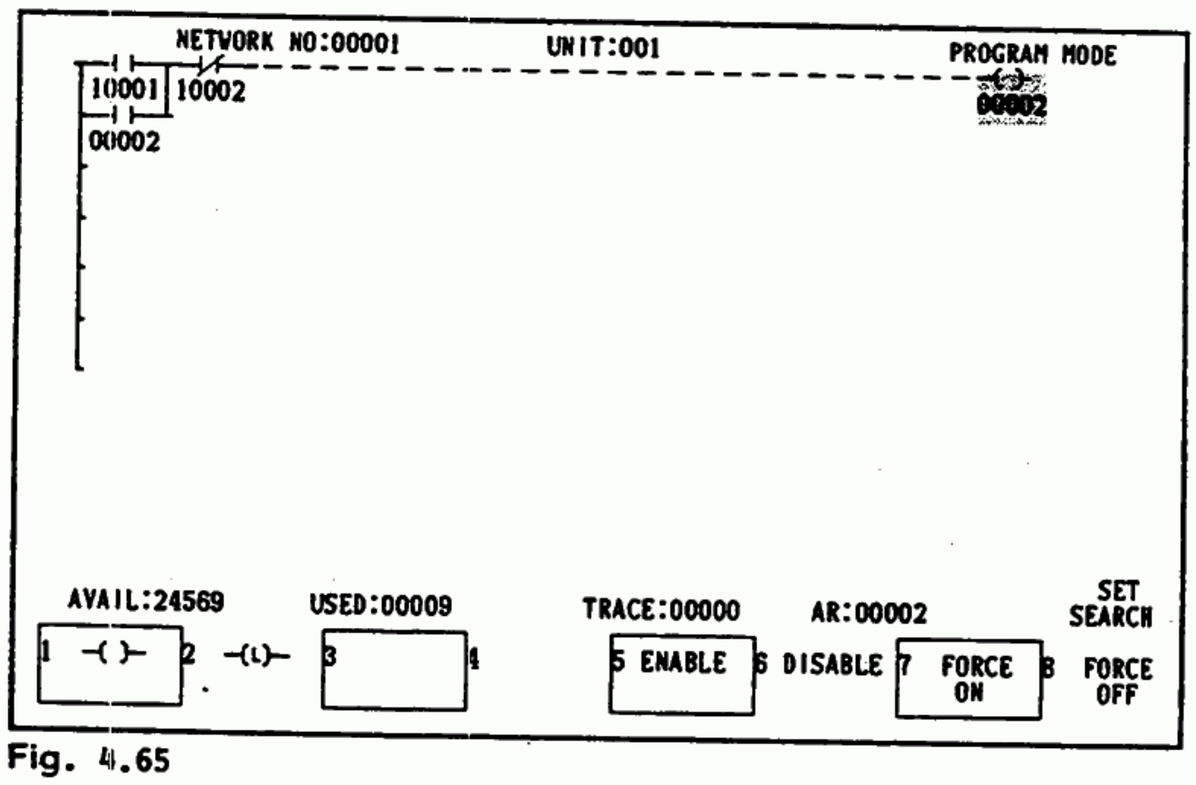


Fig. 4.65

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The elements stored or altered via the P150 are immediately written in the U84 memory.
3. Altering and storing operations of program are available when the U84 is at a standstill, or even while running.
4. The label keys are also available for storing of relay contact and coil. See the next page.

(1) RELAY, COIL ②

Storing operation is performed with variable function key.

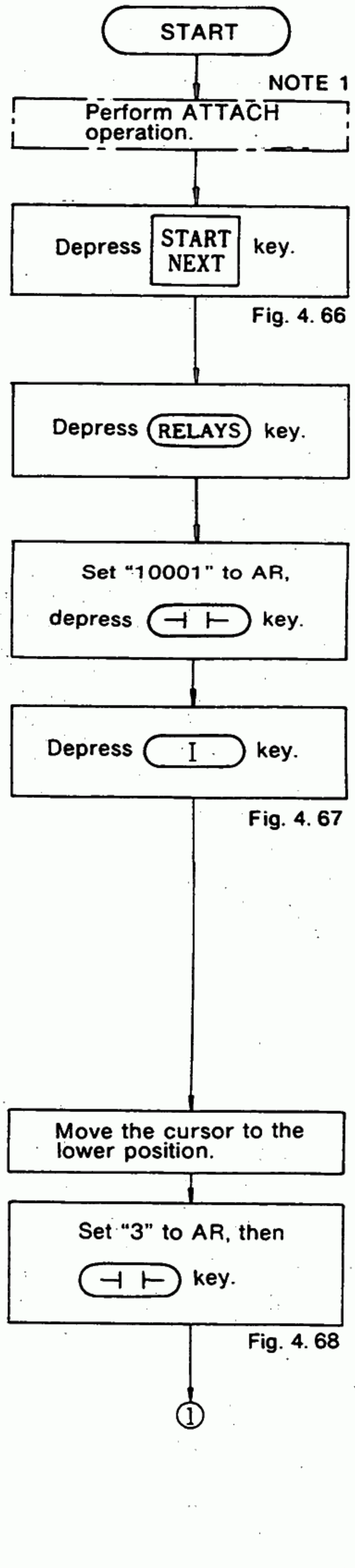


Fig. 4. 66

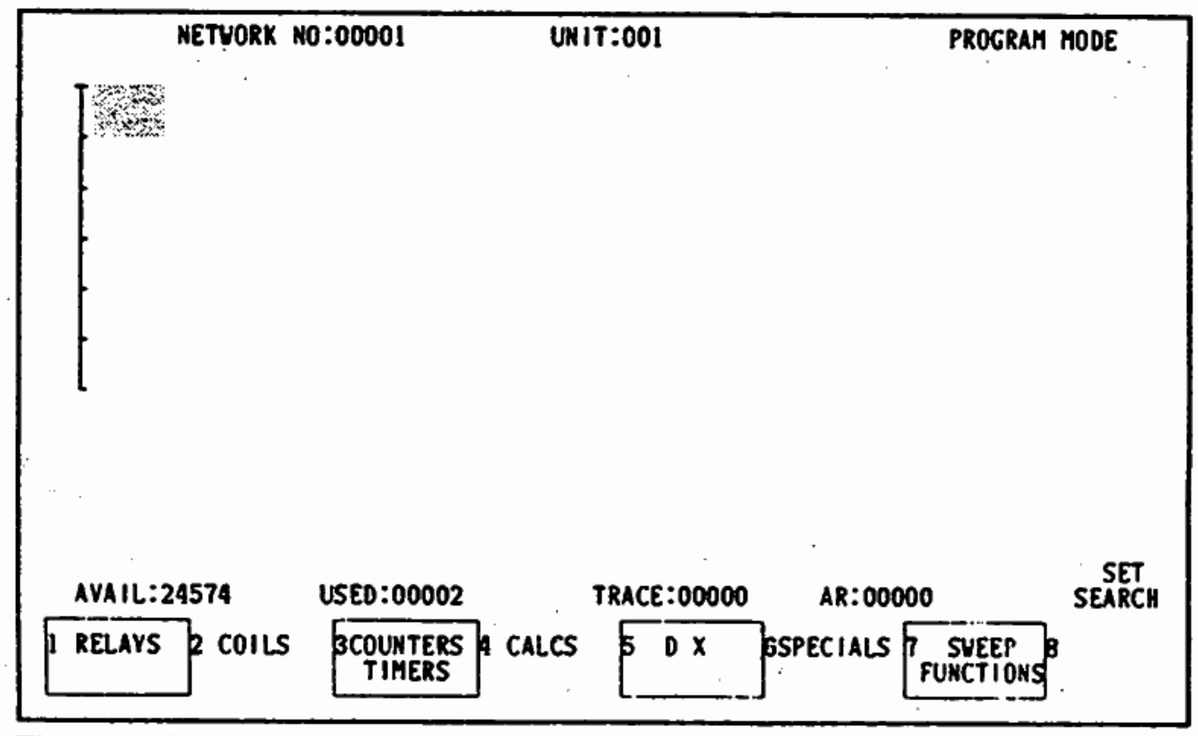


Fig. 4.66

Fig. 4.67

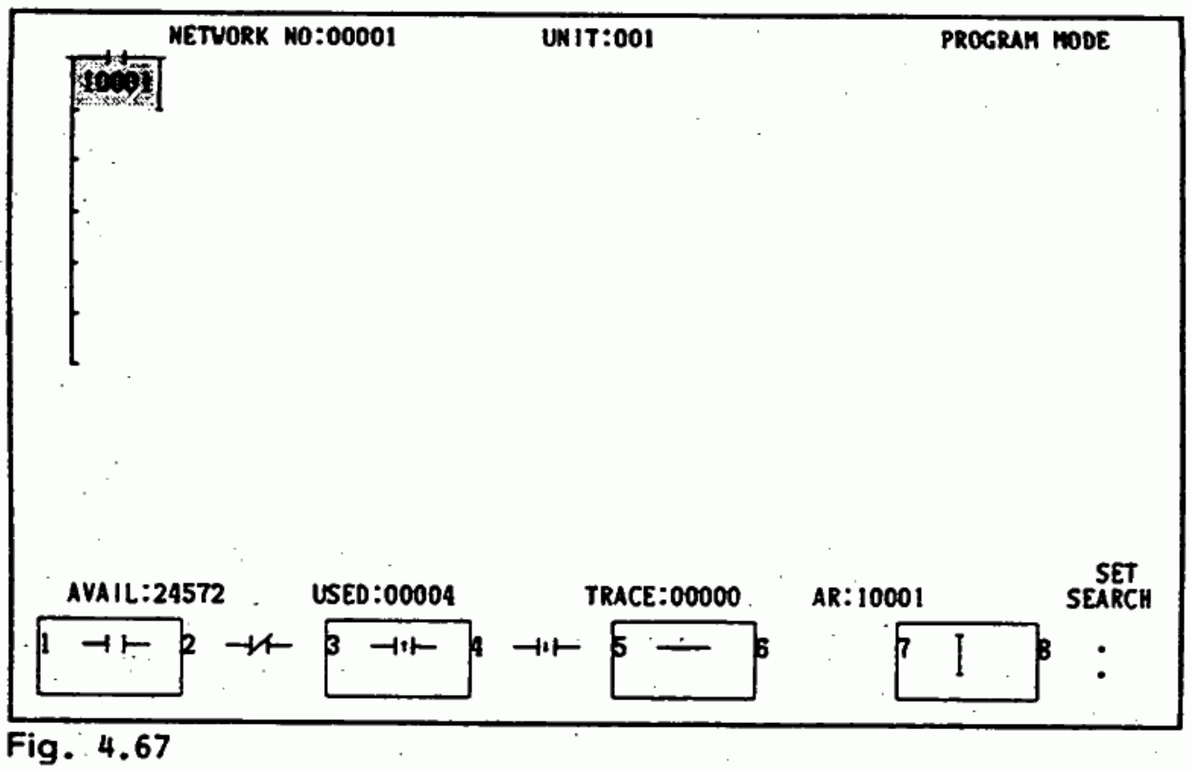


Fig. 4.67

Fig. 4. 68

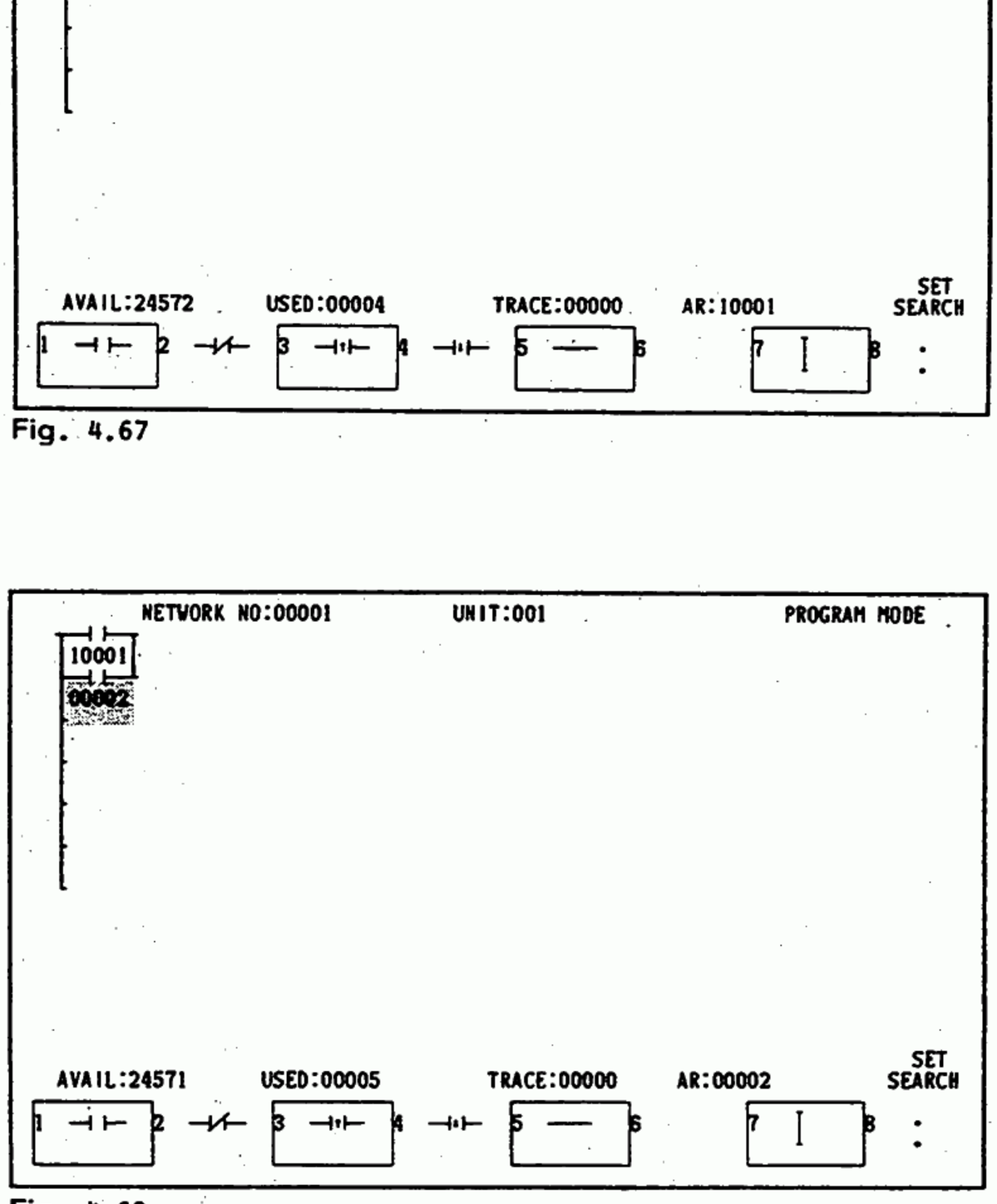


Fig. 4.68

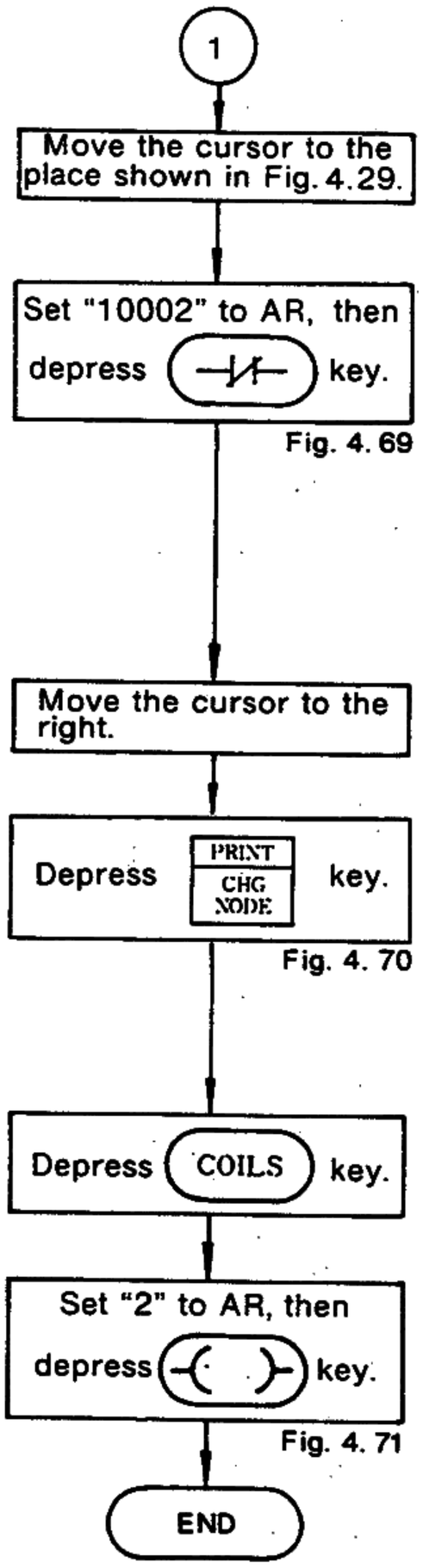
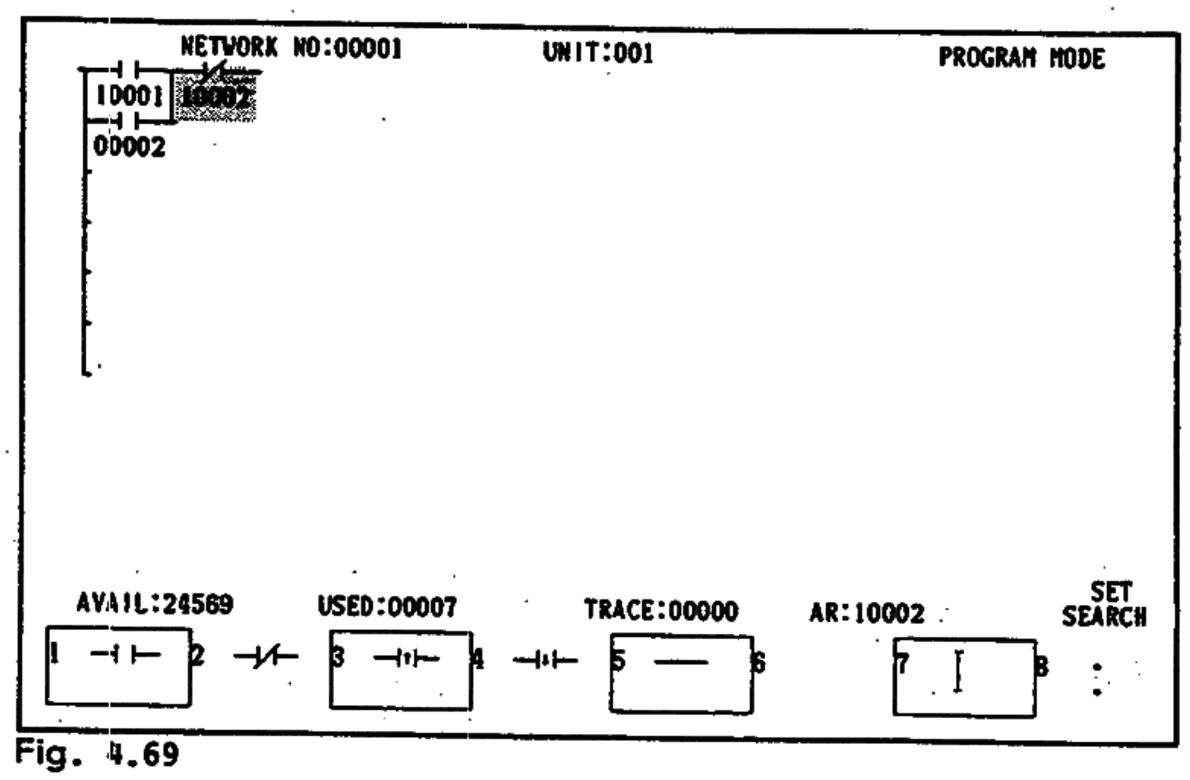


Fig. 4.69

Fig. 4.70

Fig. 4.71

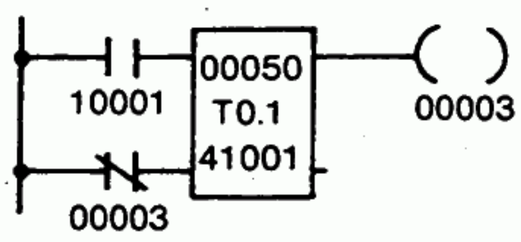


NOTE

- When ATTACH operation has already been completed, this step can be skipped.

(2) TIMER, COUNTER

Sample Timer Logic



POINT

- The cursor should be placed in the logic area.
- Elements of timer and counter should be stored in a range of 1 to 6 rungs.

Fig. 4.72

Fig. 4.73

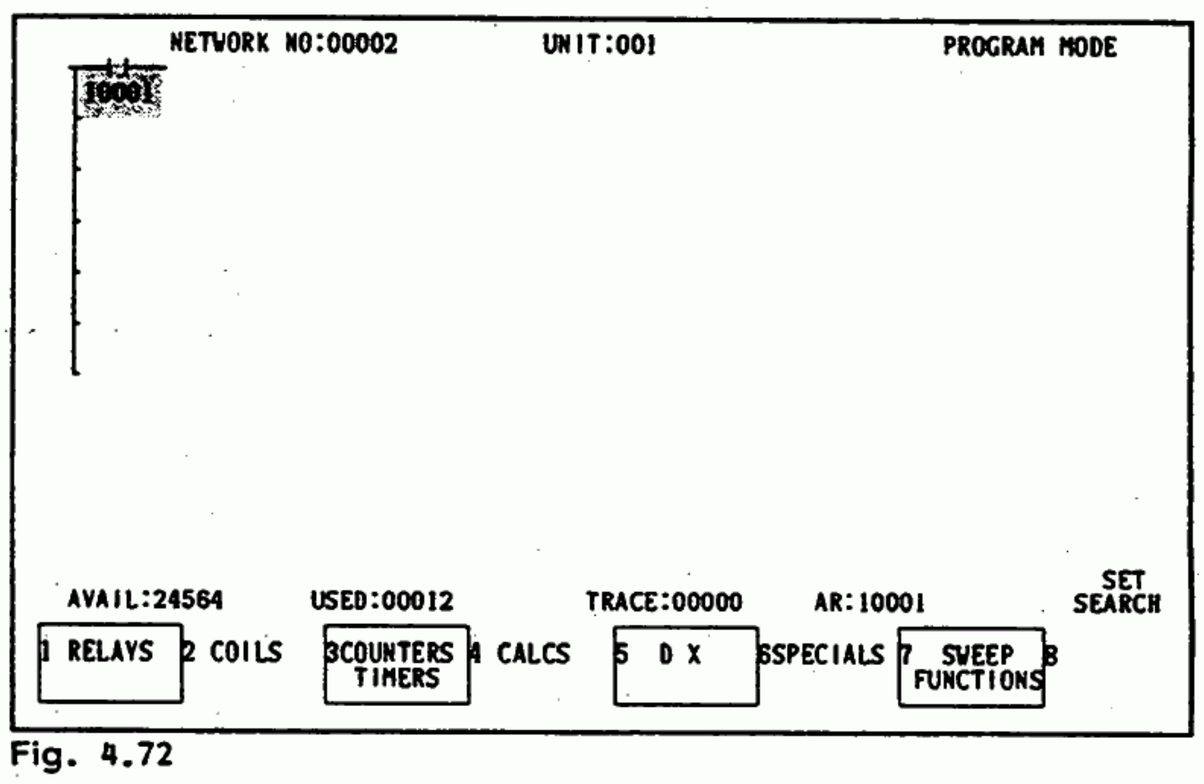


Fig. 4.72

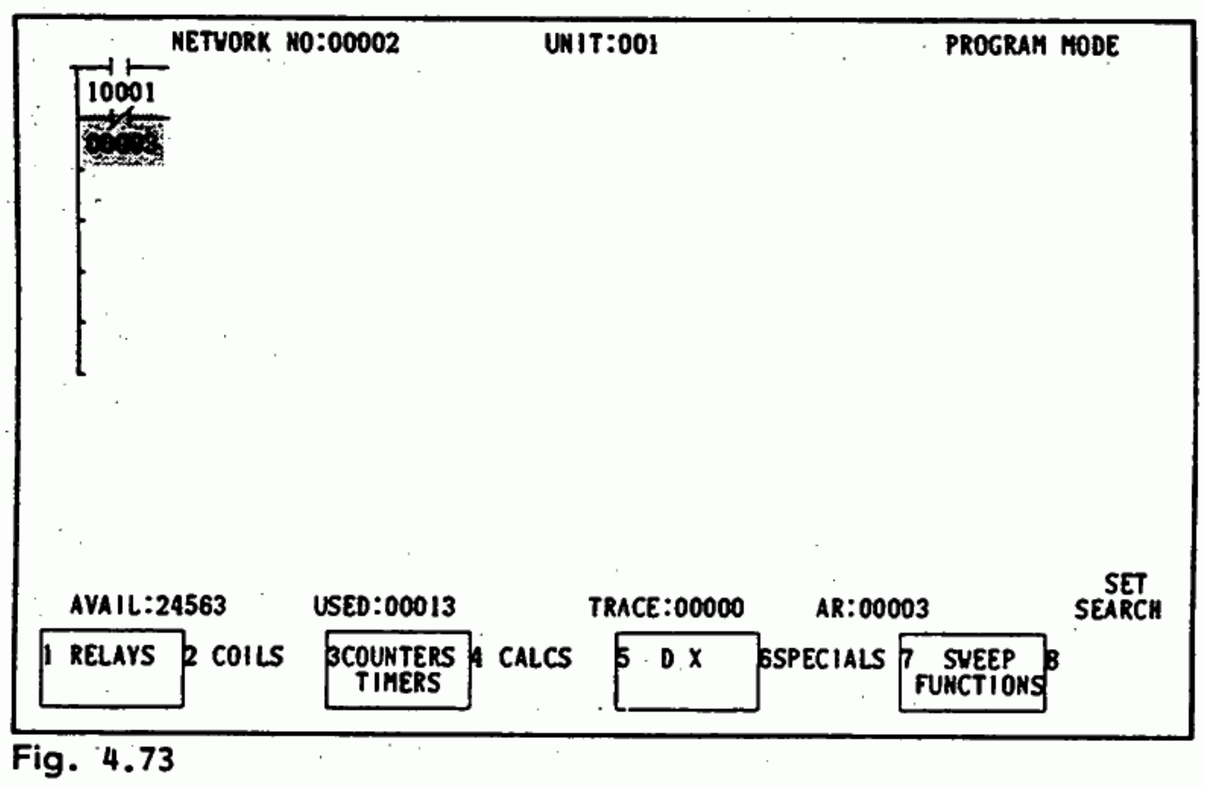


Fig. 4.73

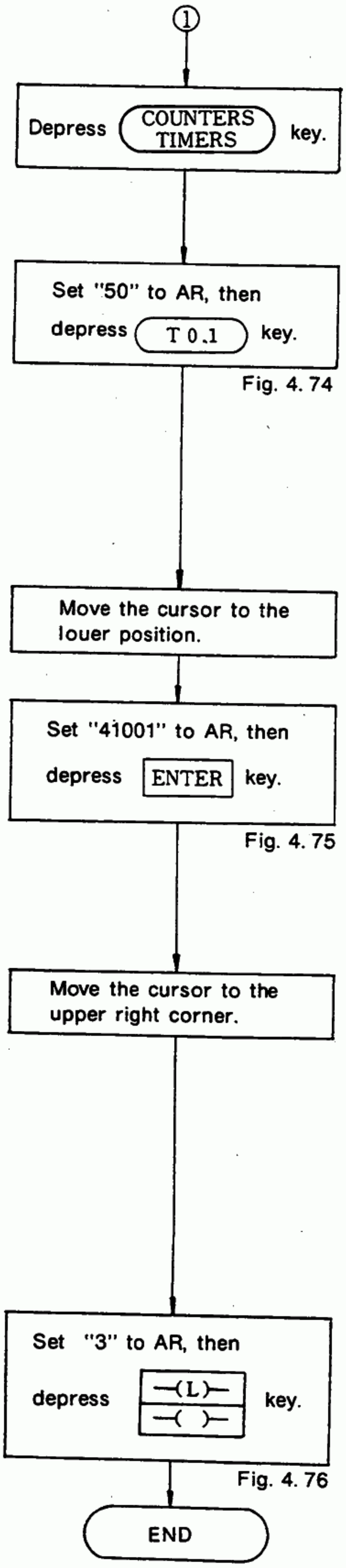


Fig. 4.74

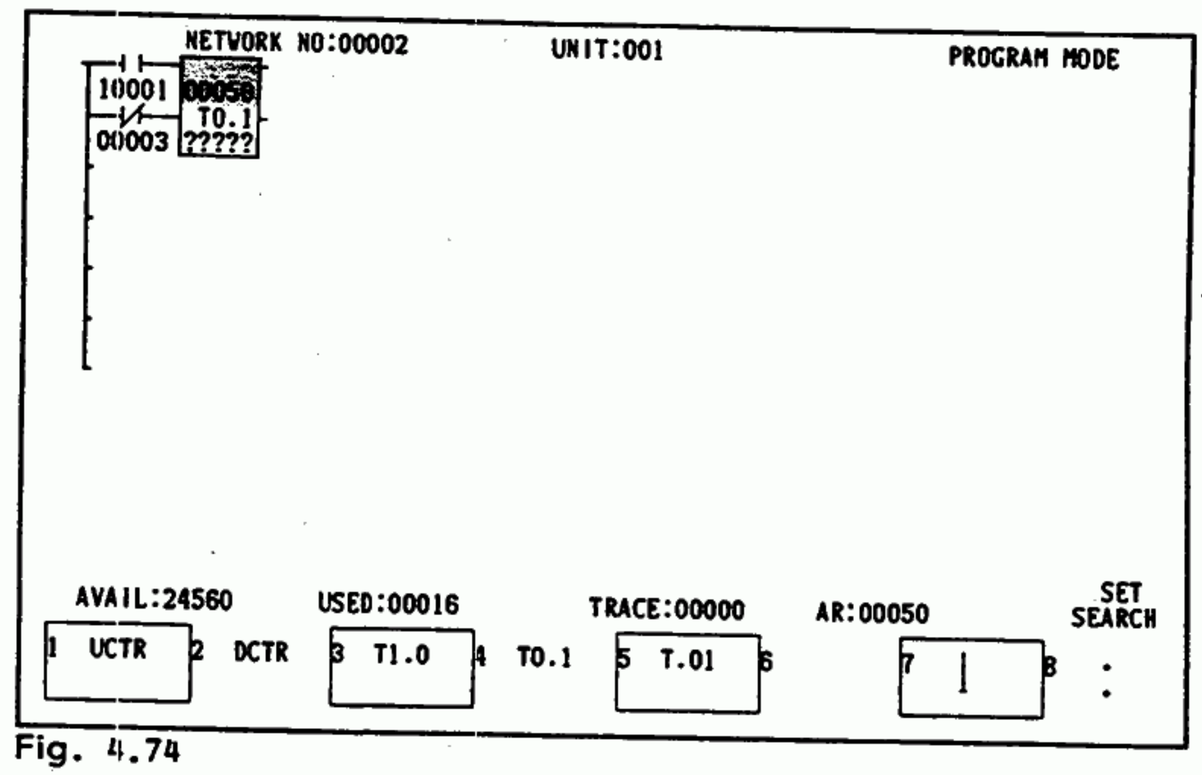


Fig. 4.75

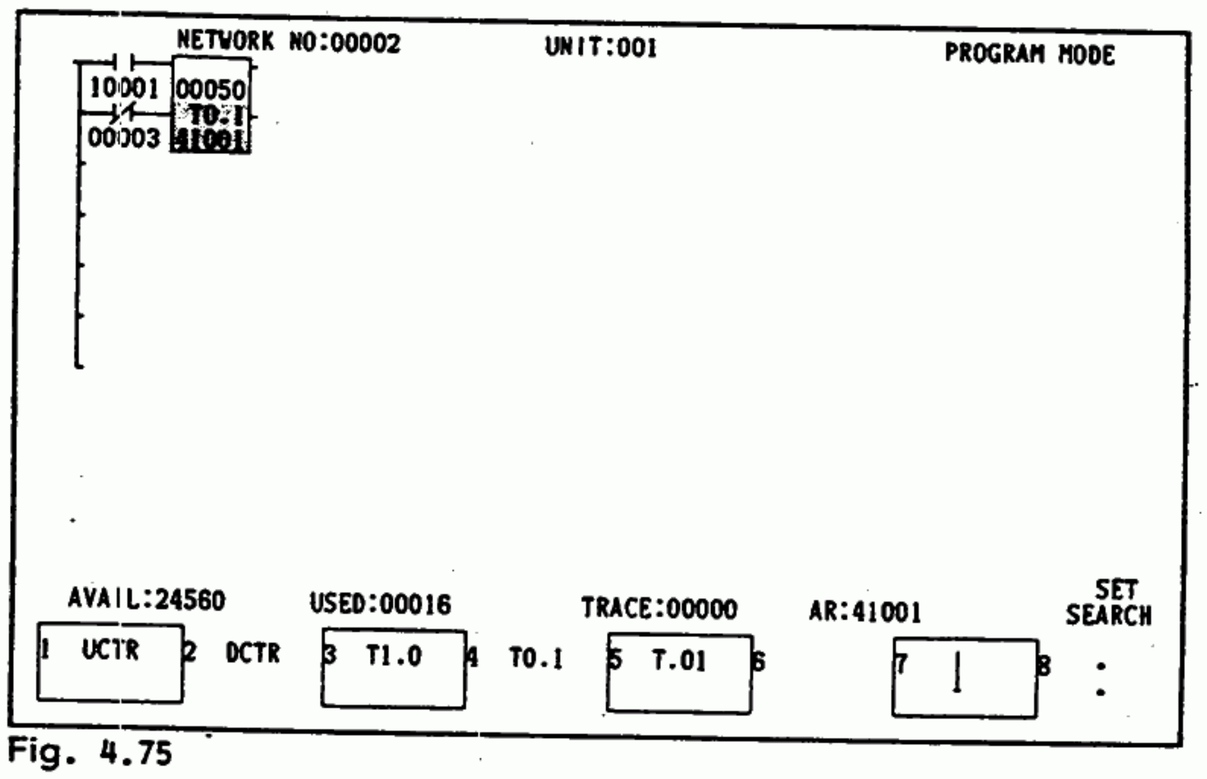
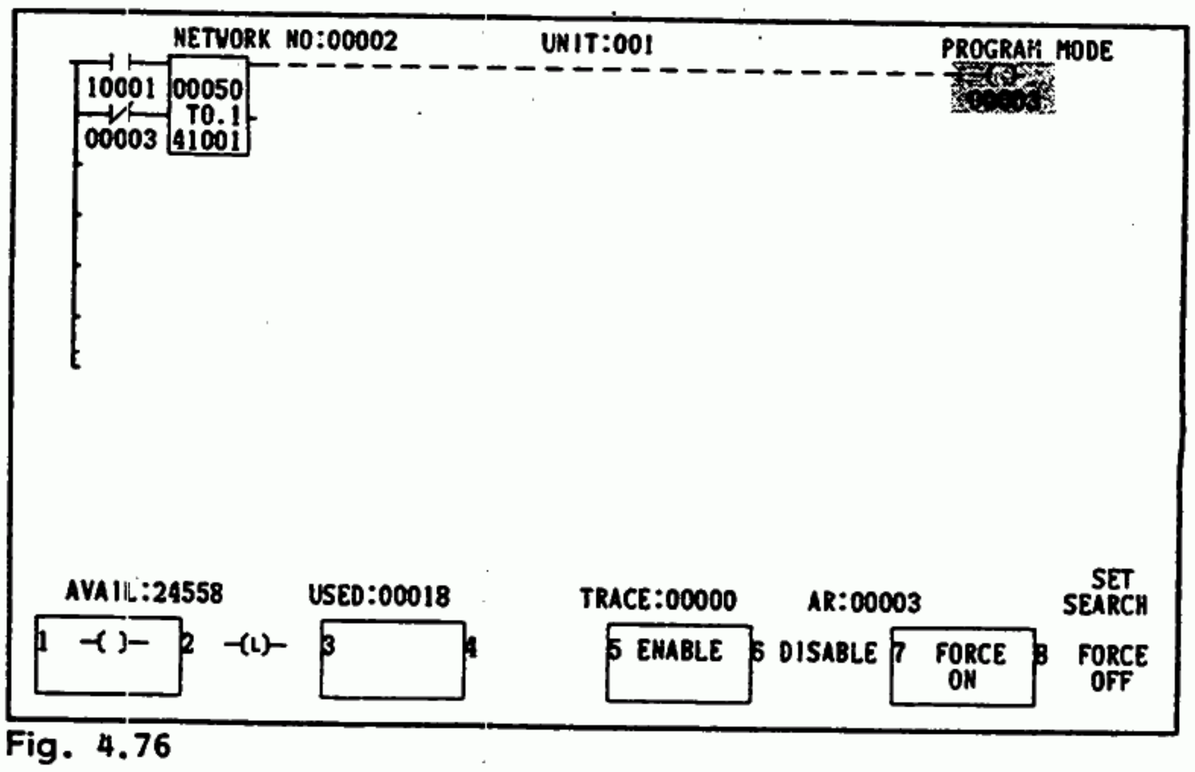


Fig. 4.76

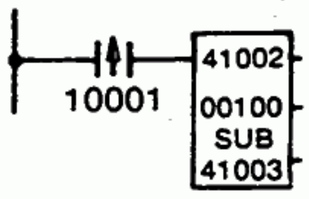


NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The label keys are also available for storing of relay contact and coil.

(3) ARITHMETIC STORING ①

Sample Subtraction Logic



POINT

- The cursor should be placed in the logic area.
- Elements of arithmetic functions should be stored in a range of 1 to 5 rungs.

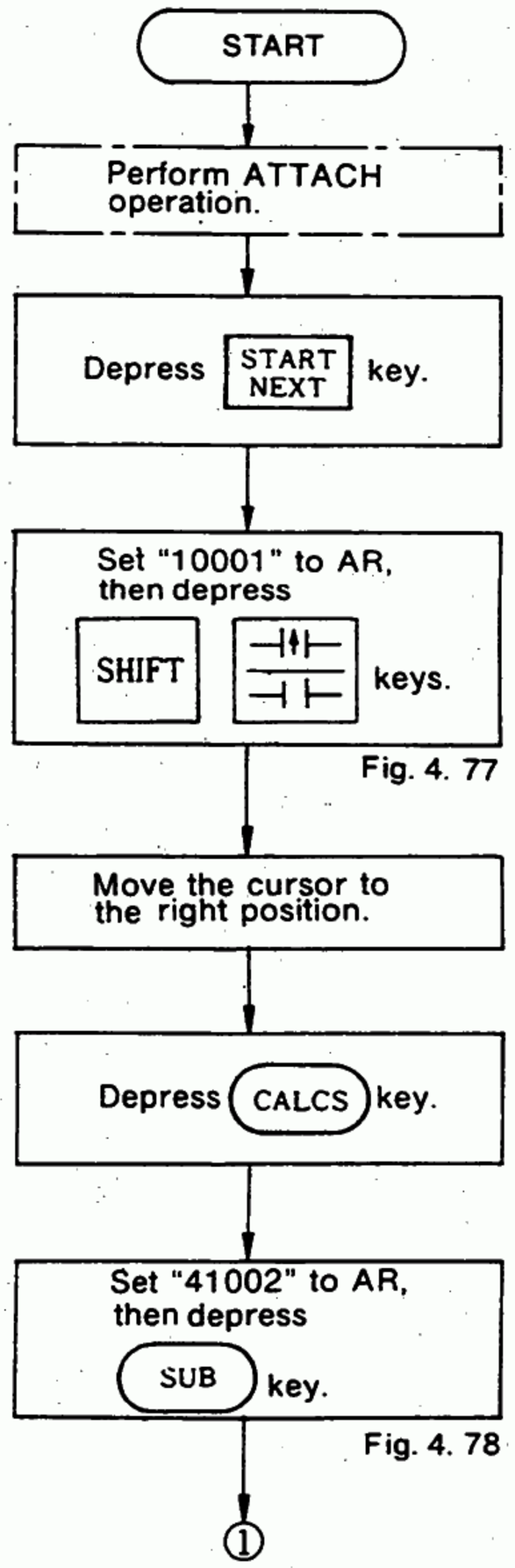


Fig. 4. 77

Fig. 4. 78

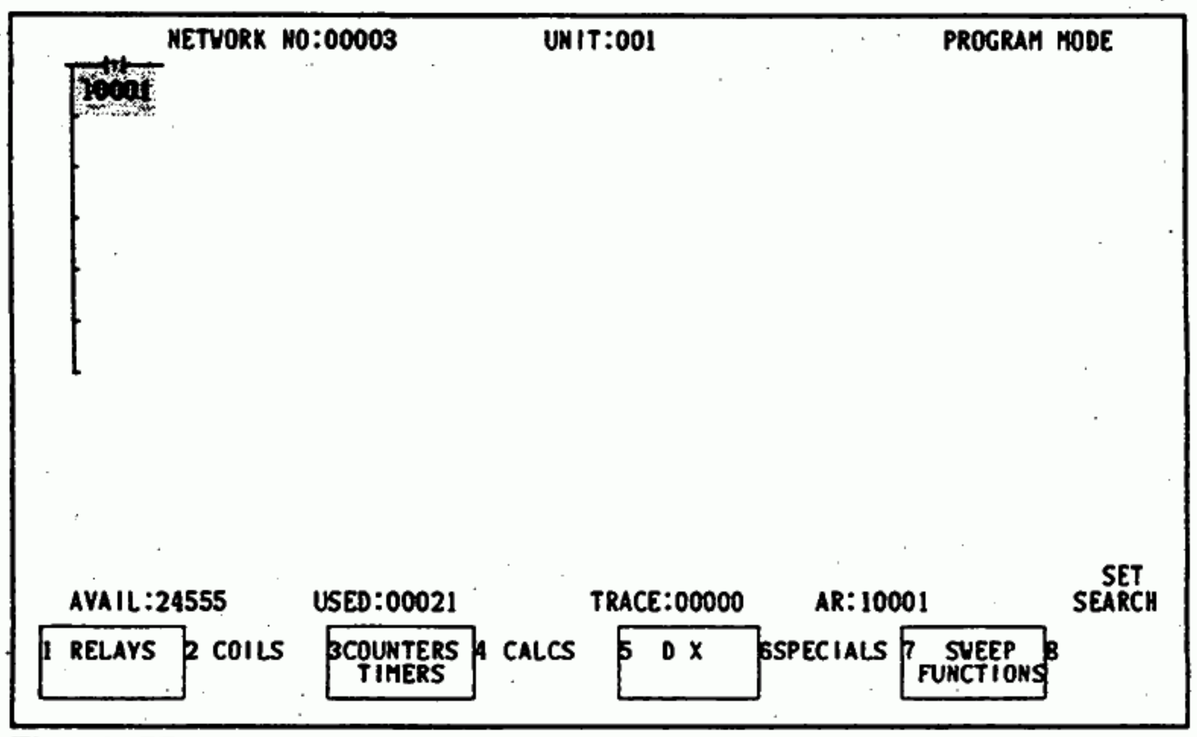


Fig. 4.77

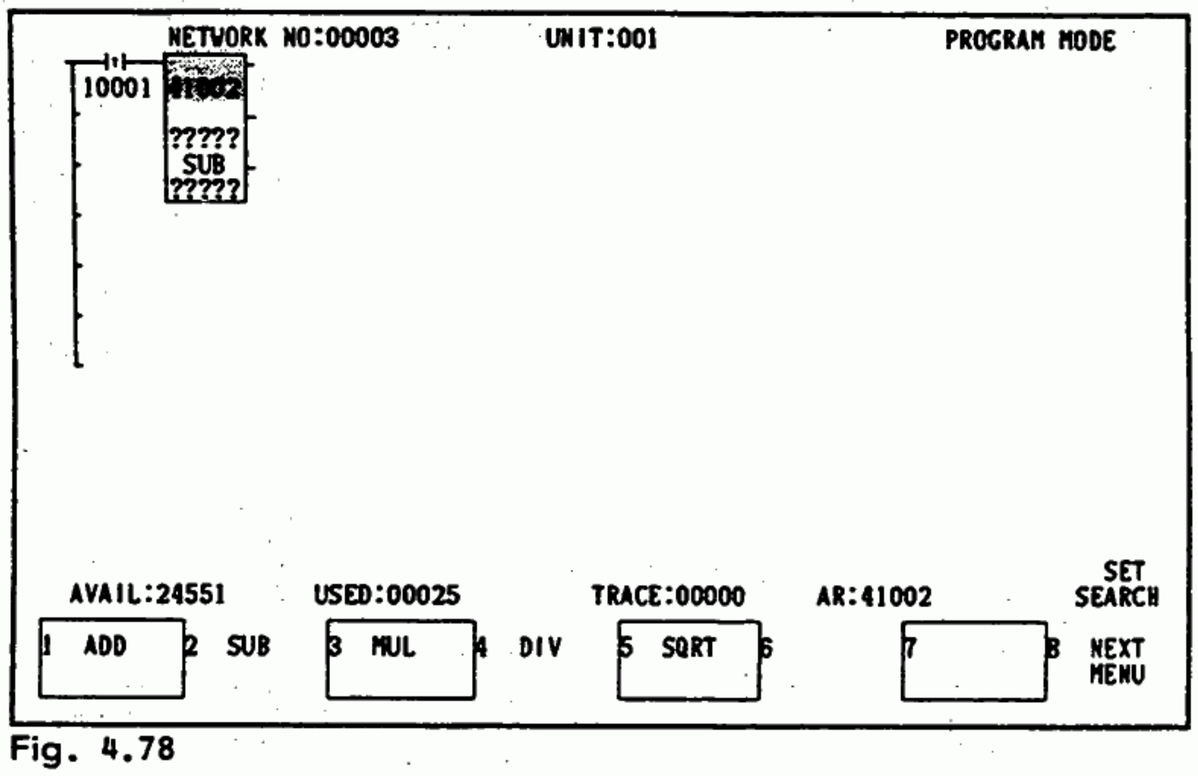


Fig. 4.78

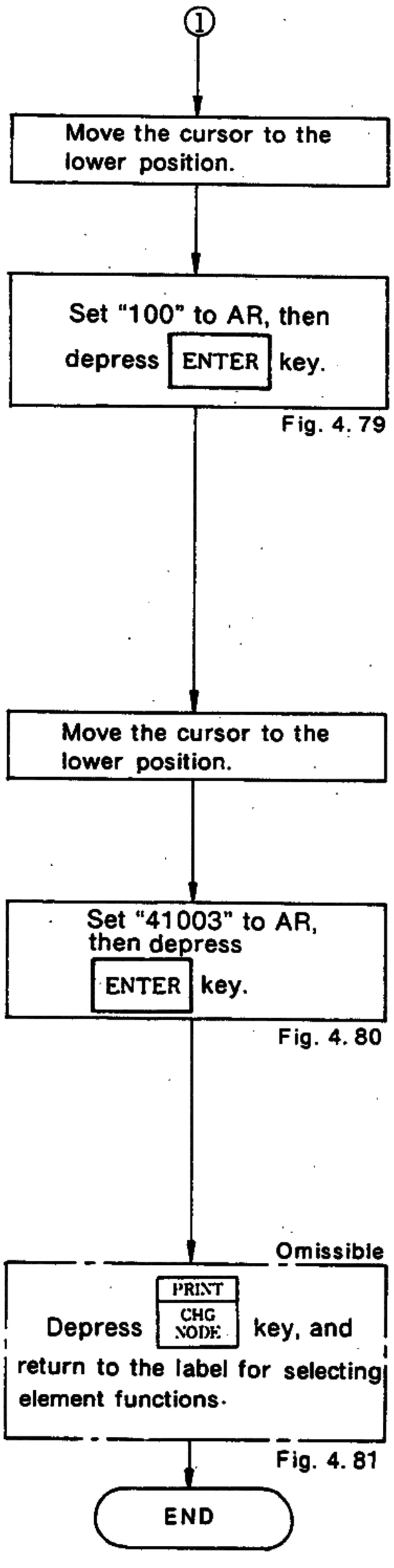
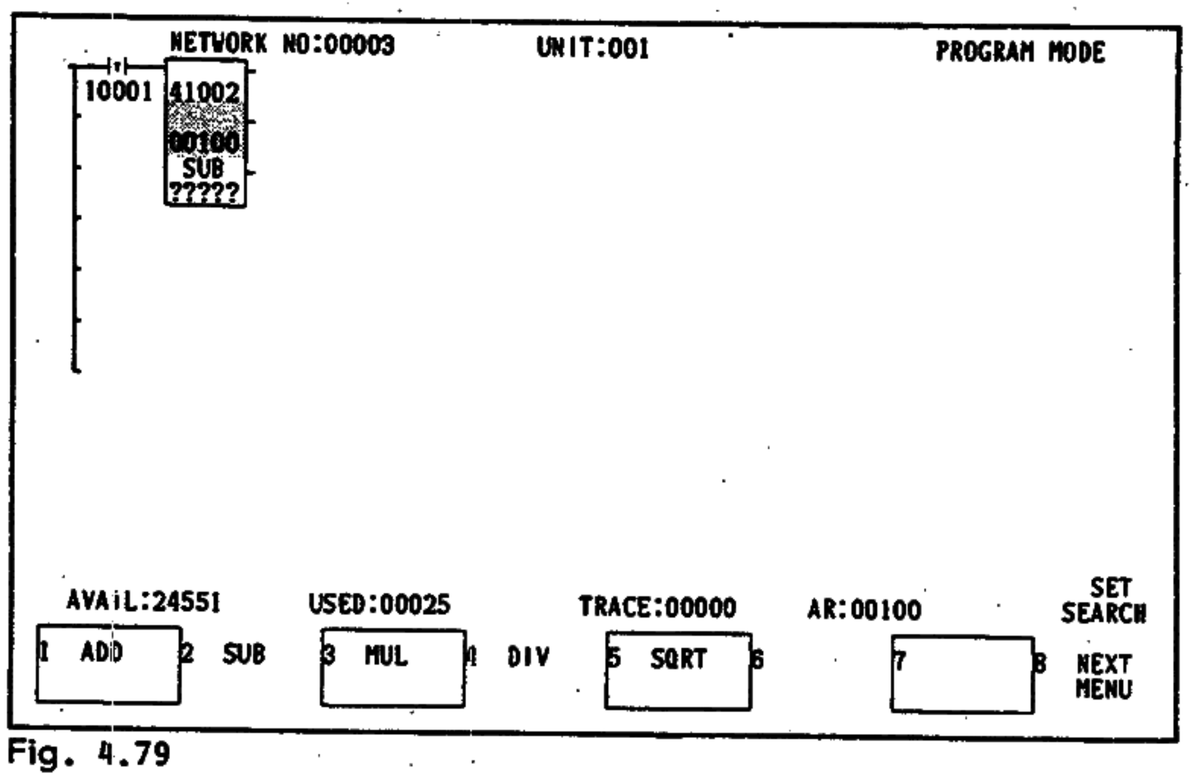
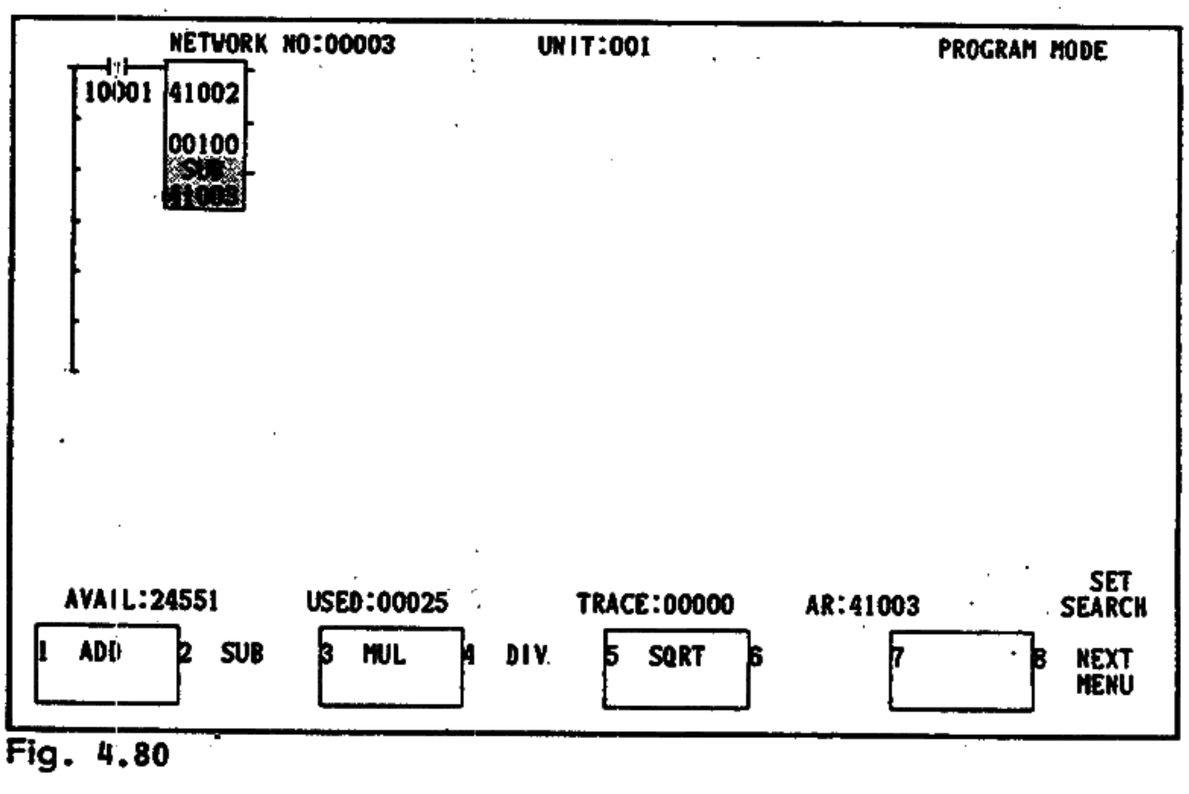


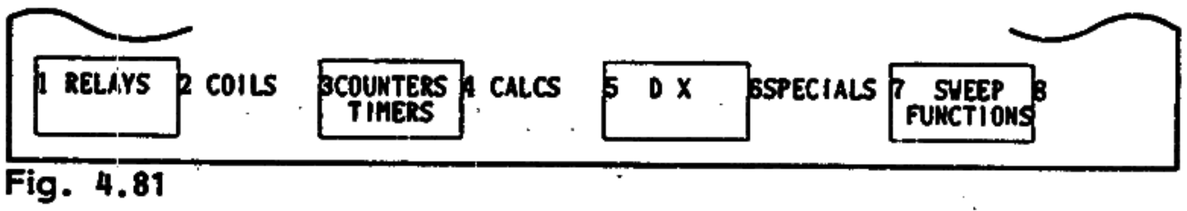
Fig. 4.79

Fig. 4.80

Fig. 4.81





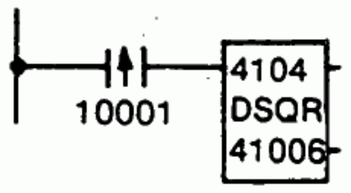


NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The label keys are also available for storing of relay contact and coil.

(3) ARITHMETIC STORING ②

Sample Double-precision Square Root



POINT

- The cursor should be placed in the logic area.
- Square root elements should be stored in a range of 1 to 6 rungs.

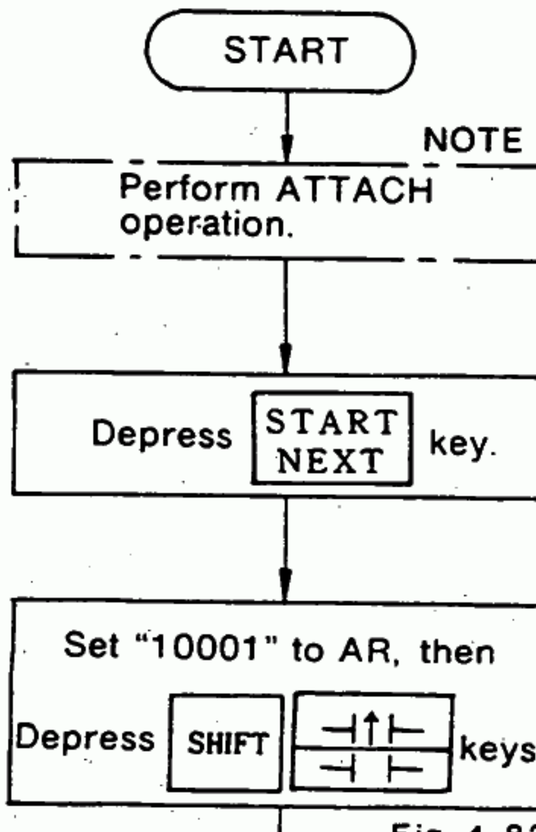


Fig. 4.82

Fig. 4.83

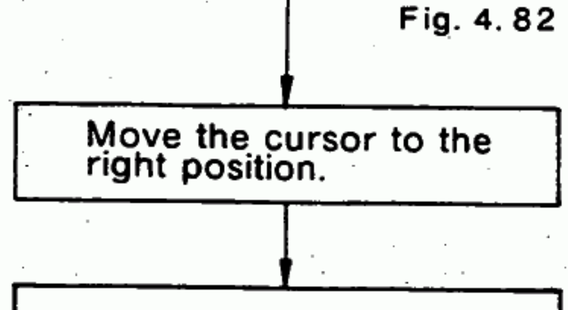


Fig. 4.84

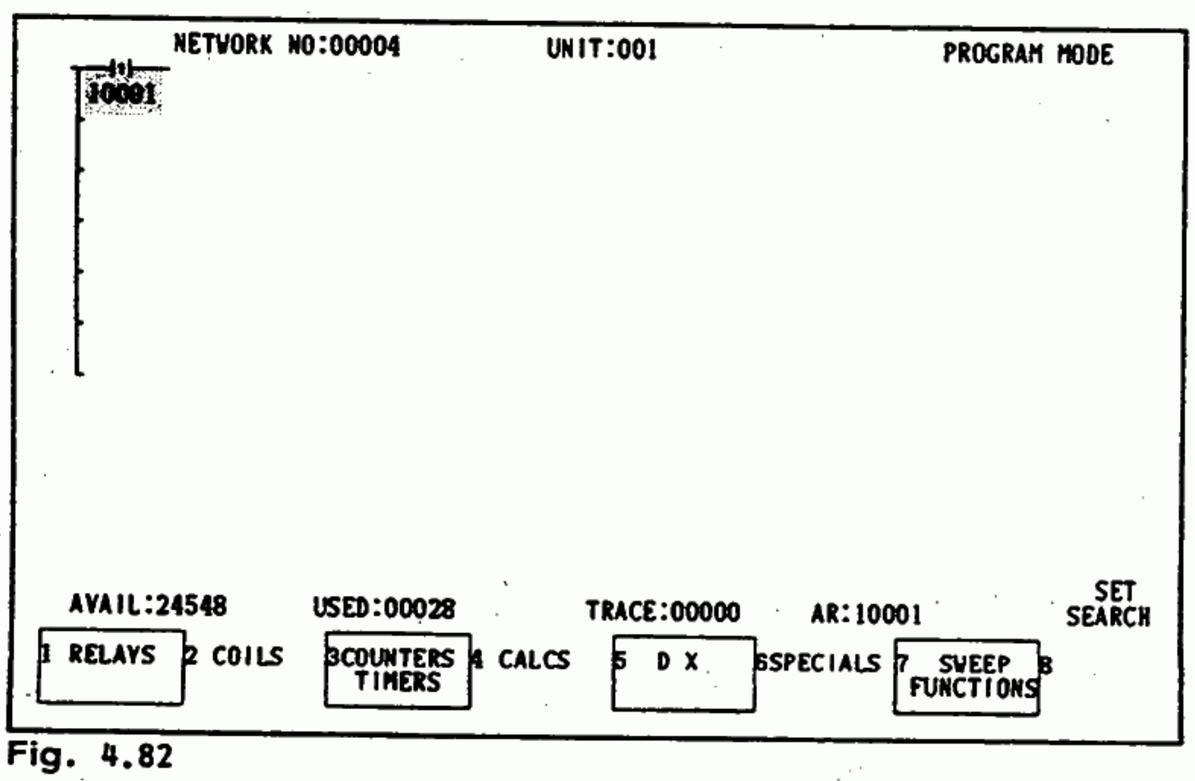


Fig. 4.82

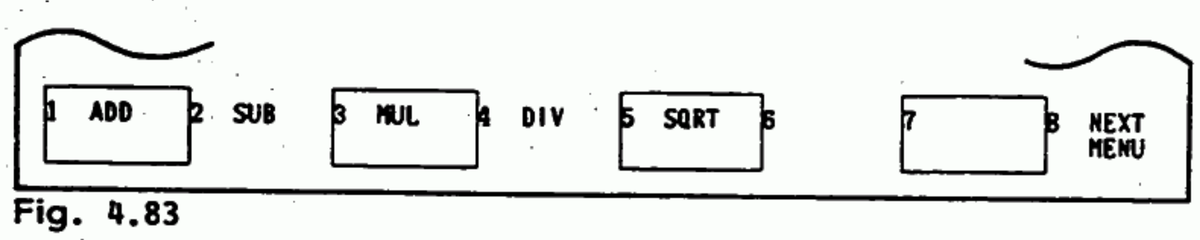


Fig. 4.83

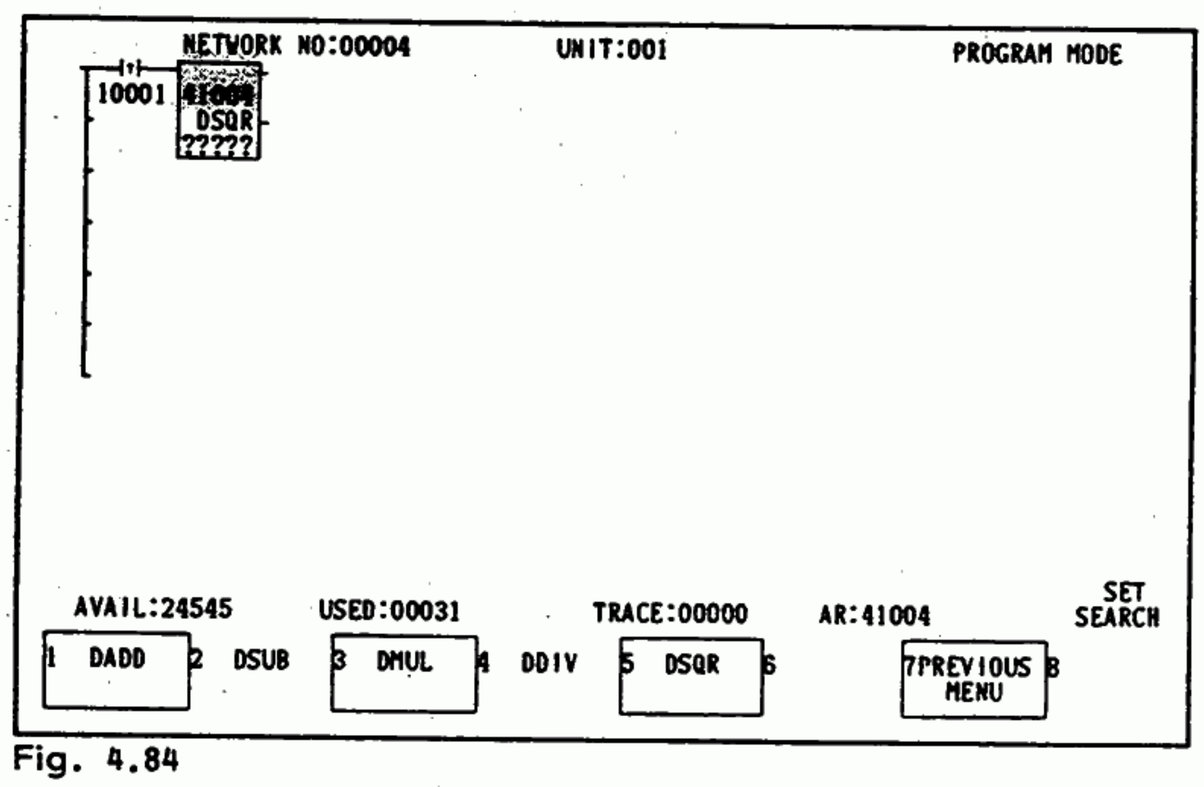


Fig. 4.84

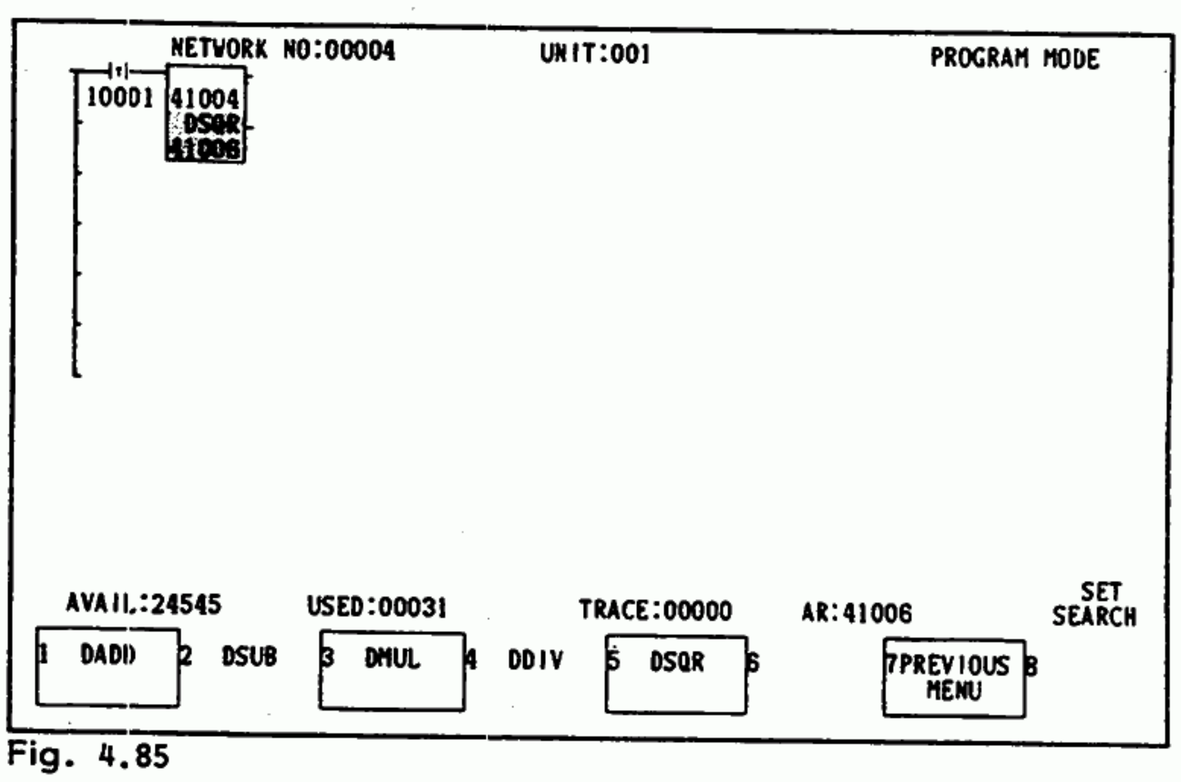
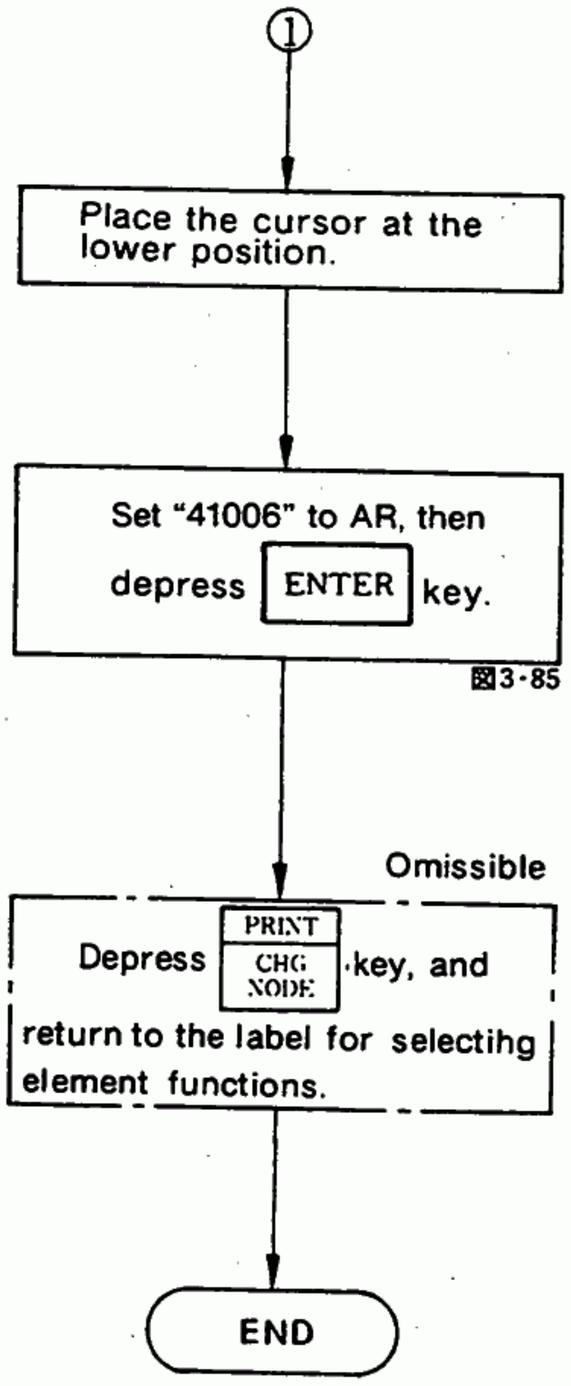


Fig. 4.85



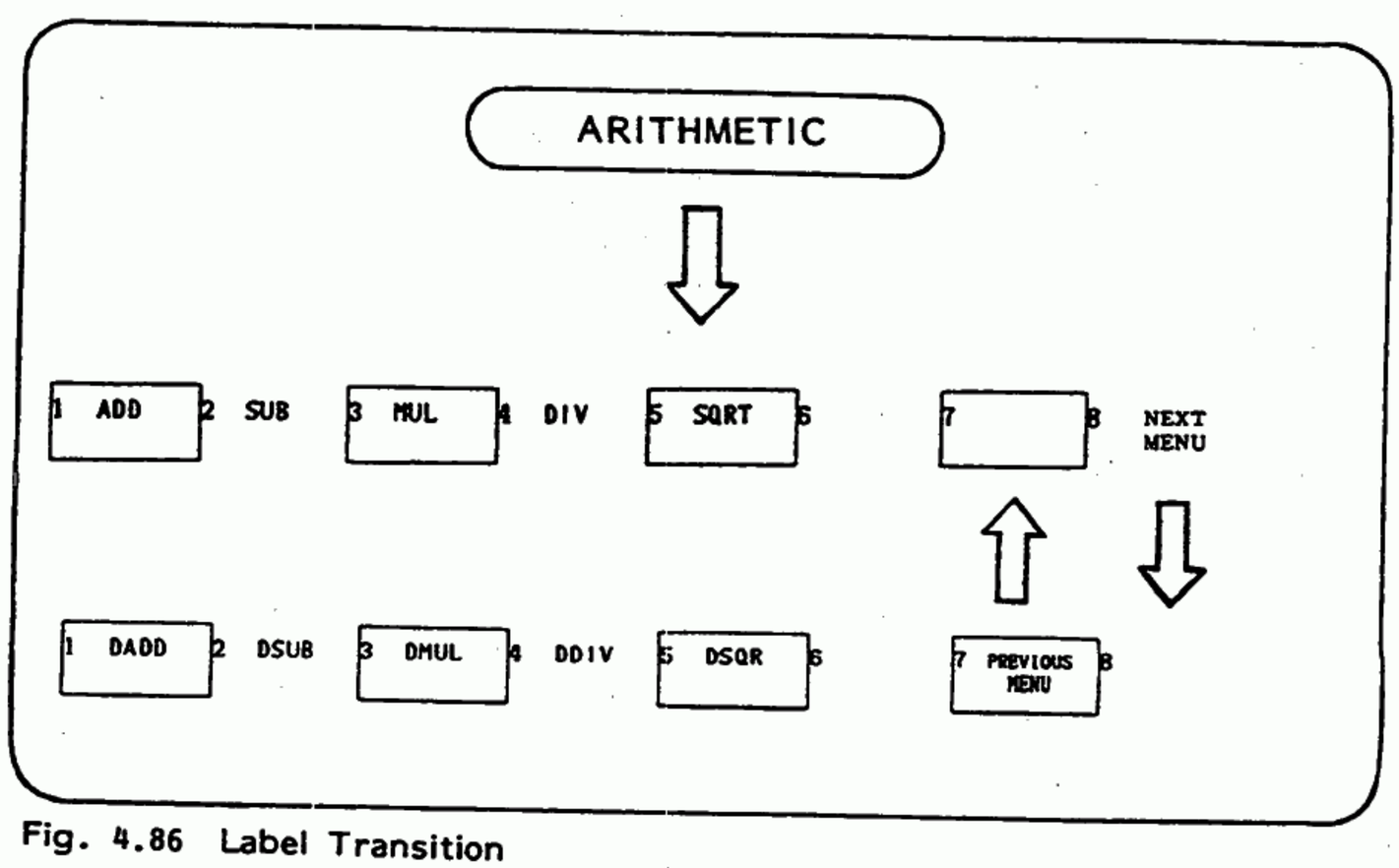


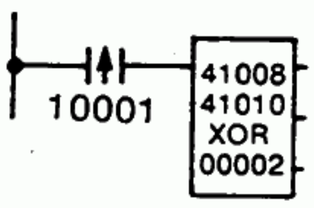
Fig. 4.86 Label Transition

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The label keys are also available for storing of relay contact and coil.

(4) MOVE AND MATRIX STORING

Sample Logical Exclusive OR of Two Matrices (XOR)



POINT

- The cursor should be placed in the logic area.
- Move elements should be stored in a range of 1 to 5 rungs, and "STAT" and "TWST" elements in a range of 1 to 6 rungs.

START

NOTE 1

Perform ATTACH operation.

Depress [START NEXT] key.

Set "10001" to AR, then depress [SHIFT] [⊣↑⊢] keys.

Fig. 4.87

Move the cursor to the right position.

Depress [DX] key.

Fig. 4.88

Depress [NEXT MENU] key.

Fig. 4.89

Depress [NEXT MENU] key.

Fig. 4.90

Depress [NEXT MENU] key.

Fig. 4.91

①

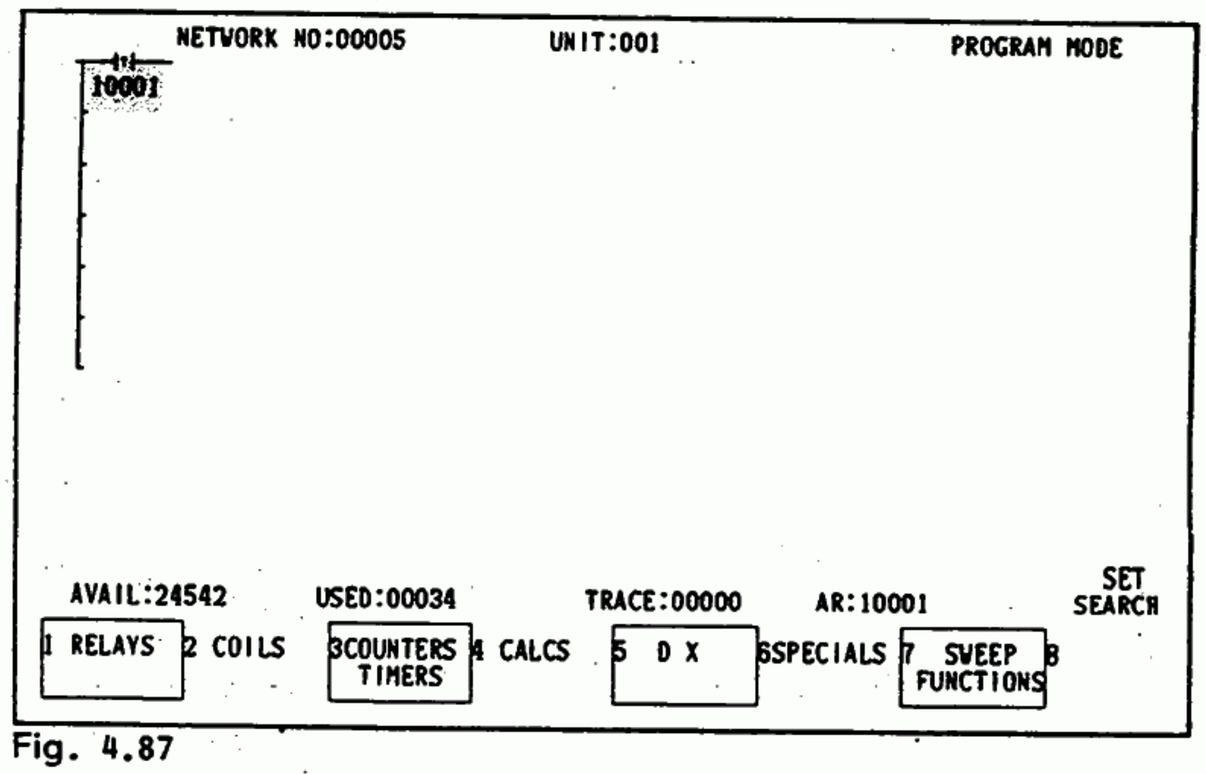


Fig. 4.87

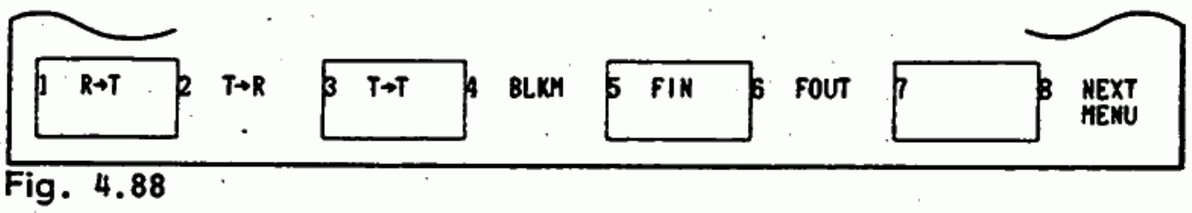


Fig. 4.88

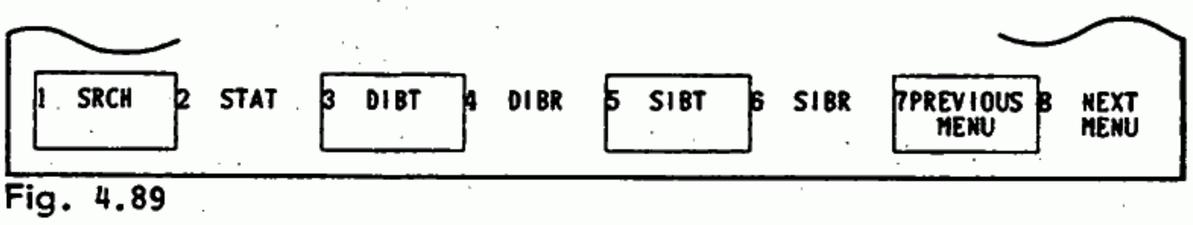


Fig. 4.89

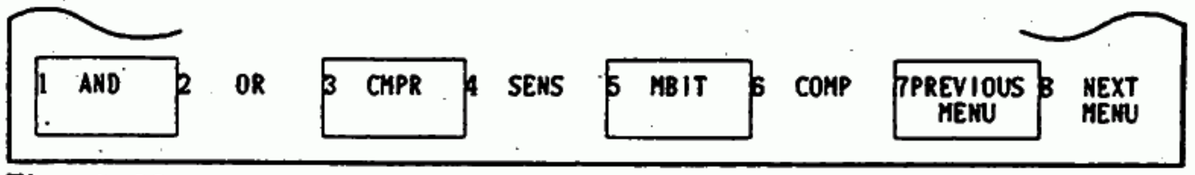


Fig. 4.90

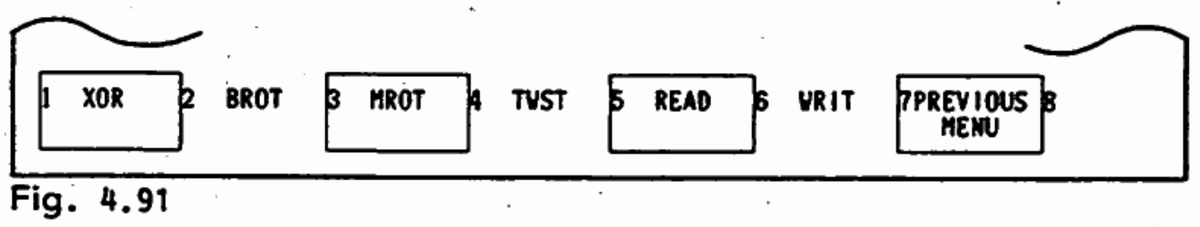
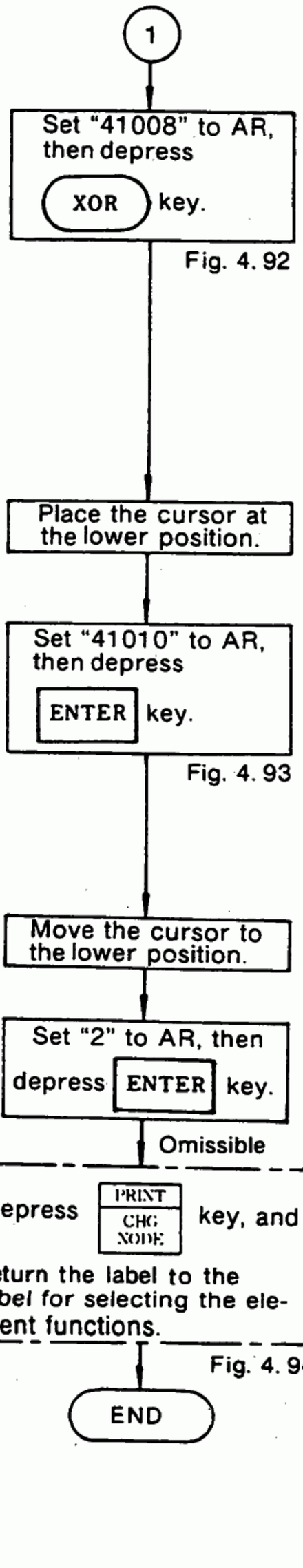


Fig. 4.91



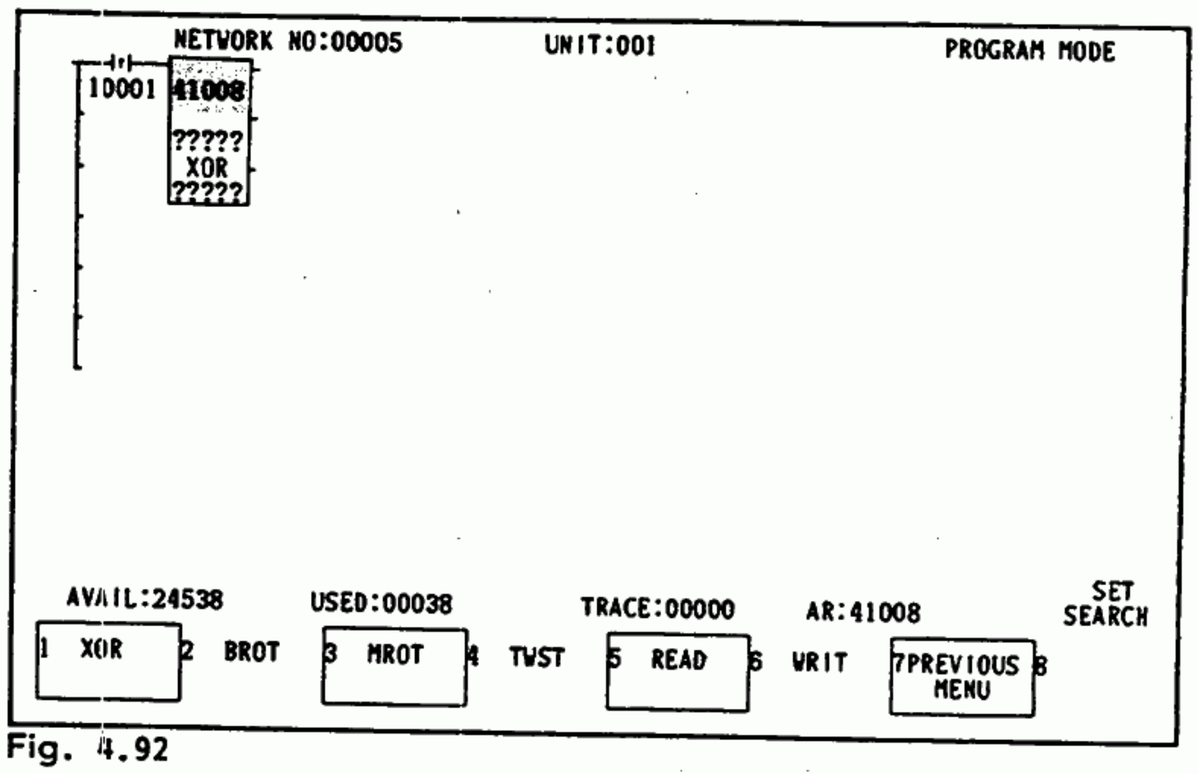


Fig. 4.92

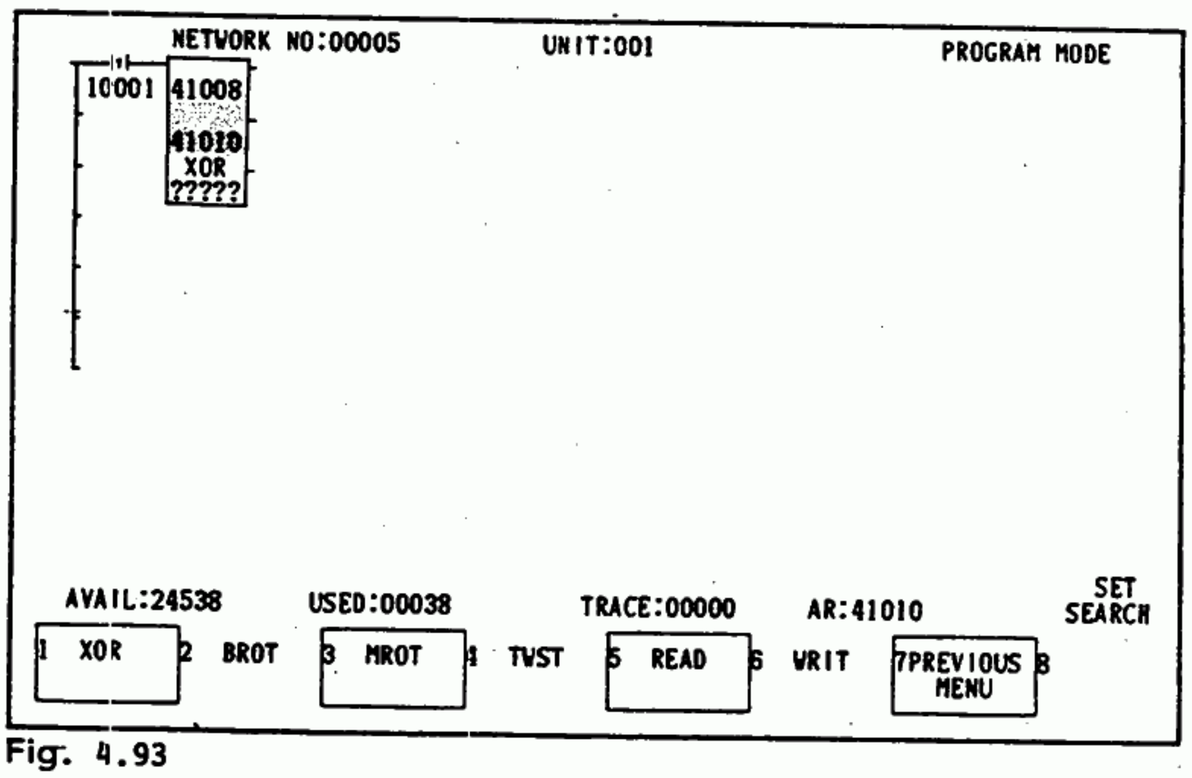


Fig. 4.93

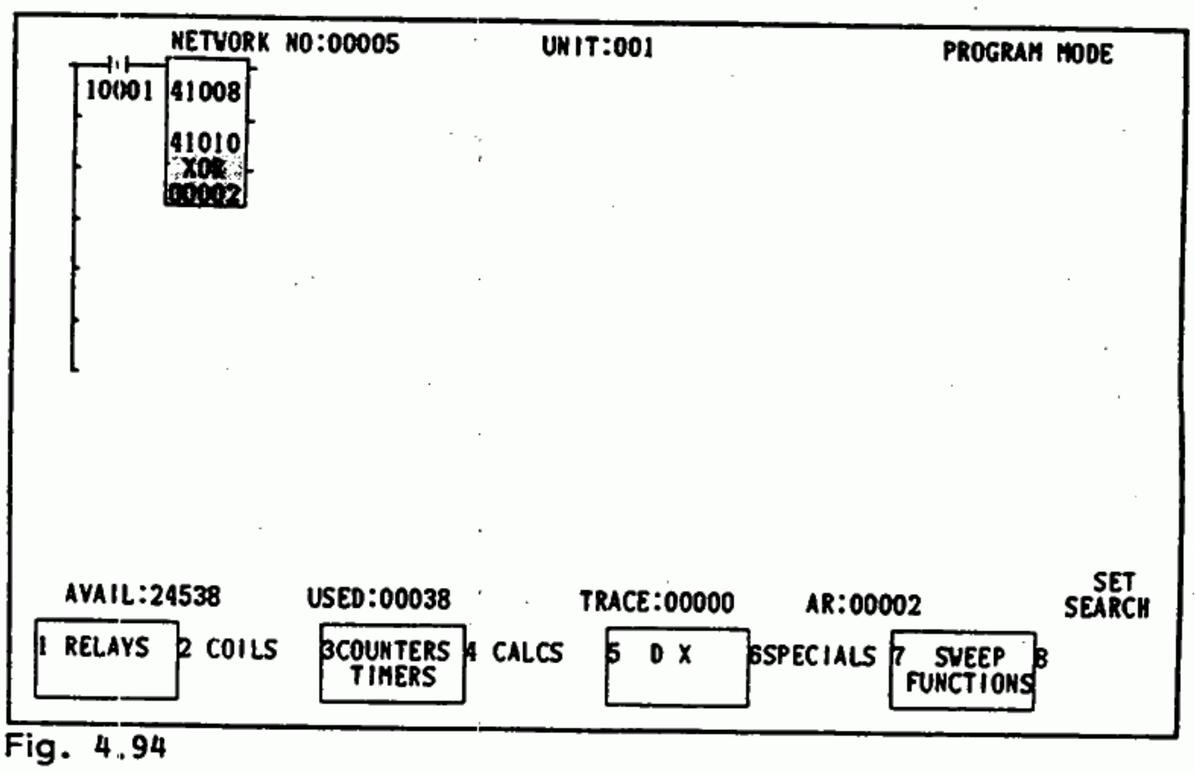


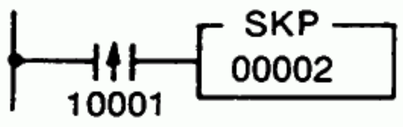
Fig. 4.94

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The label keys are also available for storing of relay contact and coil.

(5) SKIP STORING

Sample Skip



POINT

· The cursor should be placed in the logic area.

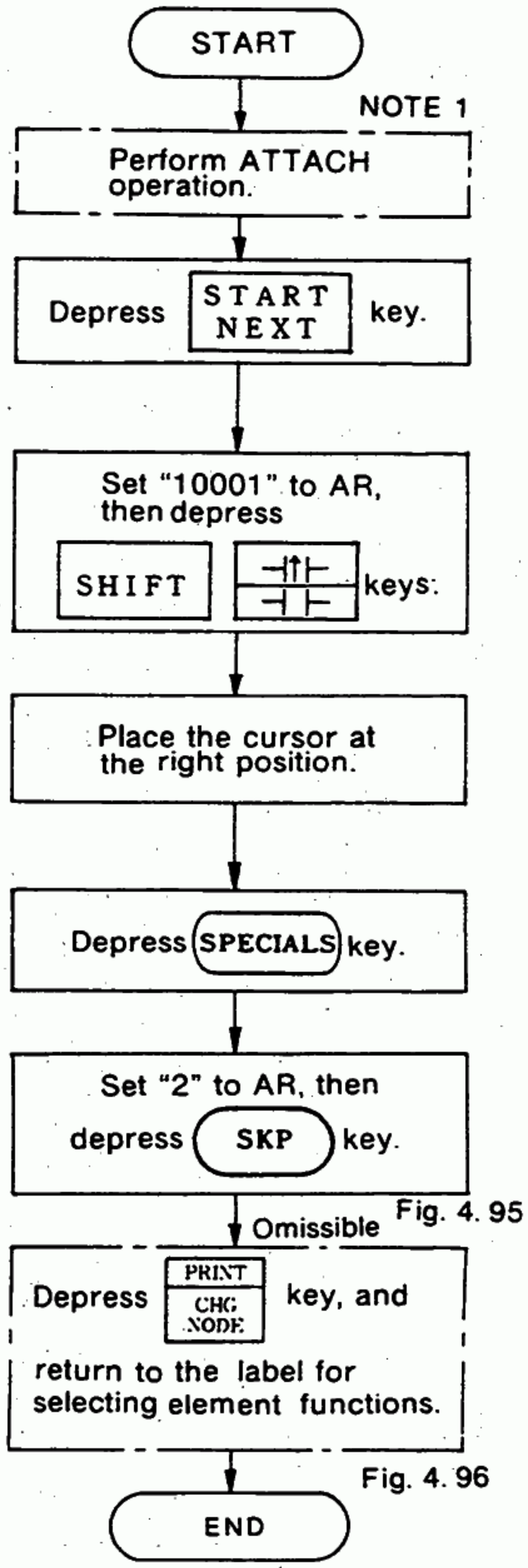


Fig. 4.95

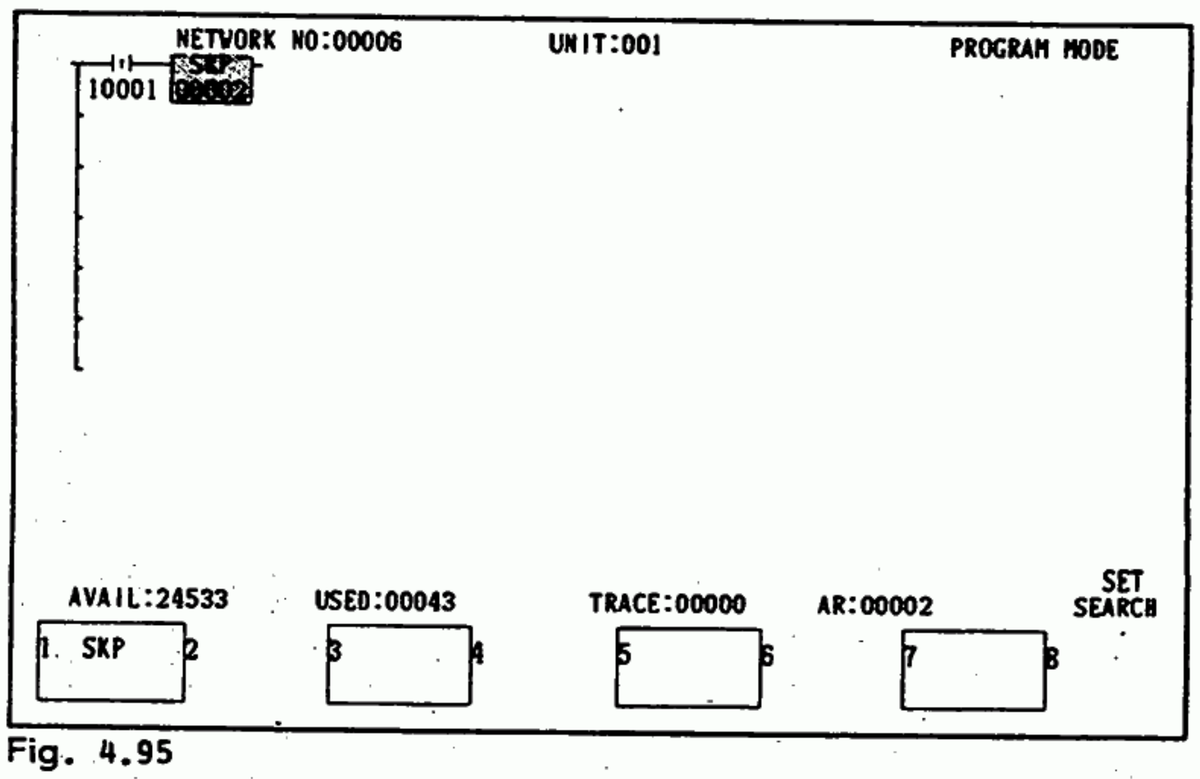


Fig. 4.95

Fig. 4.96

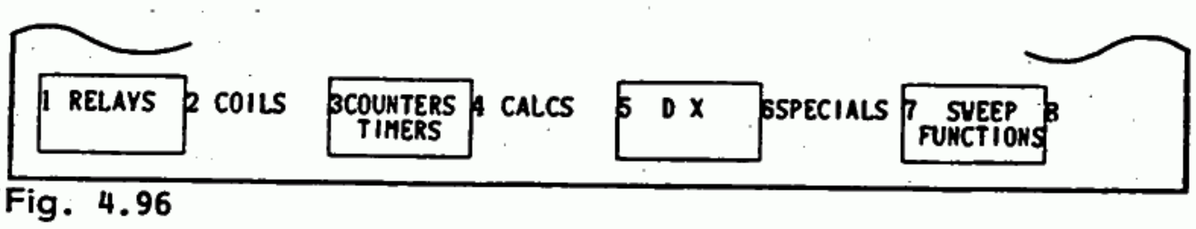


Fig. 4.96

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. When the displayed network is skipped, the following message is displayed to prevent the user from misinterpreting data in the skipped network:
   "POWER DISPLAY INVALID-NETWORK SKIPPED"
   In this case, power flow displayed on the P150 display screen will be invalid for the skipped network.
3. The label keys are also available for storing of relay contact and coil.

Table 4.6 Label Displays for Selecting Element Functions

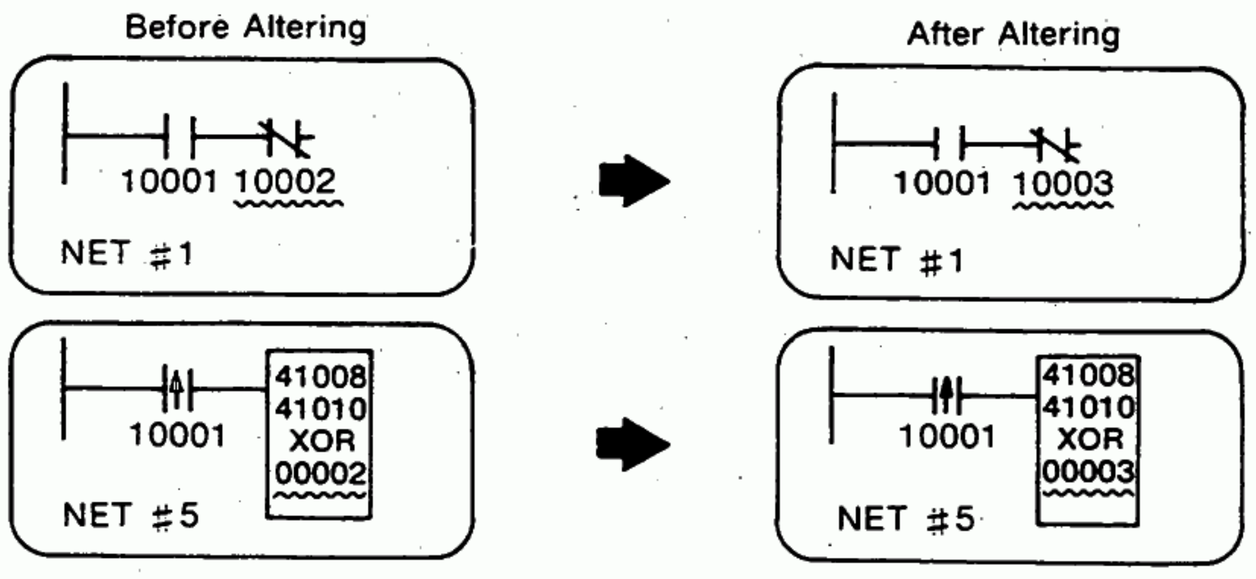
Label Keys \ Label Displays	1	2	3	4	5	6	7	8
	1 RELAYS	2 COILS	3 COUNTERS TIMERS	4 CALCS	5 DX	6 SPECIALS	7 SWEEP FUNCTIONS	8
RELAYS	1 -|/|-	2	-||-	4 -||-	5 —	6	7 I	8 :
COILS	1 -( )-	2 -(L)-	3	4	5 ENABLE	6 DISABLE	7 FORCE ON	8 FORCE OFF
COUNTER TIMERS	1 UCTR	2 DCTR	T1.0	4 T 0.1	5 T.01	6	7 I	8 :
CALCS	1 ADD	2 SUB	3 MUL	4 DIV	5 SQRT	6	7	8 NEXT MENU
	1 DADD	2 DSUB	3 DMUL	4 DDIV	5 DSQR	6	7 PREVIOUS MENU	8
DX	1 R→T	2 T→R	3 · T→T	4 BLKM	5 FIN	6 FOUT	7	8 NEXT MENU
	1 SRCH	2 STAT	3 DIBT	4 DIBR	5 SIBT	6 SIBR	7 PREVIOUS MENU	8 NEXT MENU
	1 AND	2 OR	3 CMPR	4 SENS	5 MBIT	6 COMP	7 PREVIOUS MENU	8 NEXT MENU
	1 XOR	2 BROT	3 MROT	4 TWST	5 READ	6 WRIT	7 PREVIOUS MENU	8
SPECIALS	1 SKP	2	3	4	5	6	7	8

4.6.2 NETWORK ALTERING

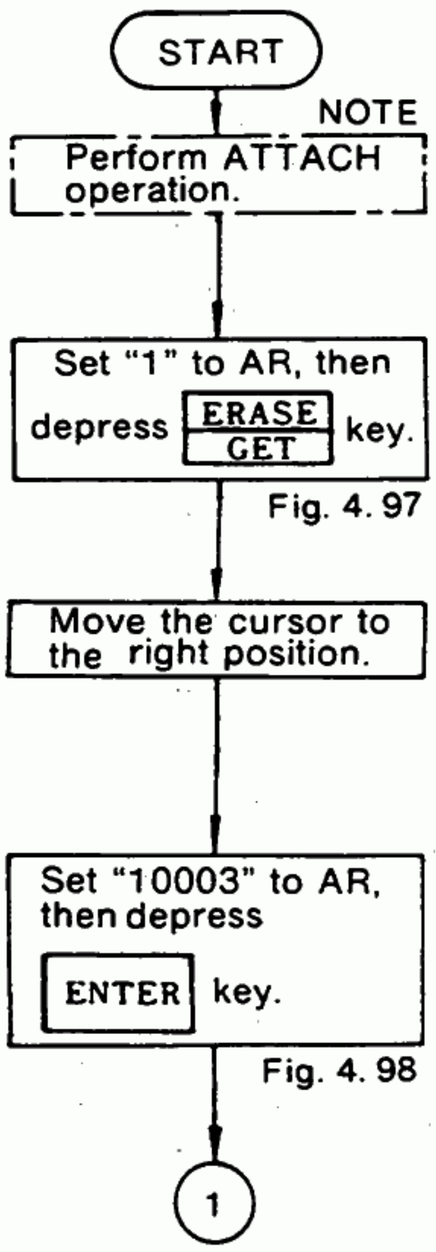
PROGRAM MODE

(1) REFERENCE NUMBER ALTERING

Sample Reference Number and Constant Altering



POINT · The cursor should be placed in the logic area.



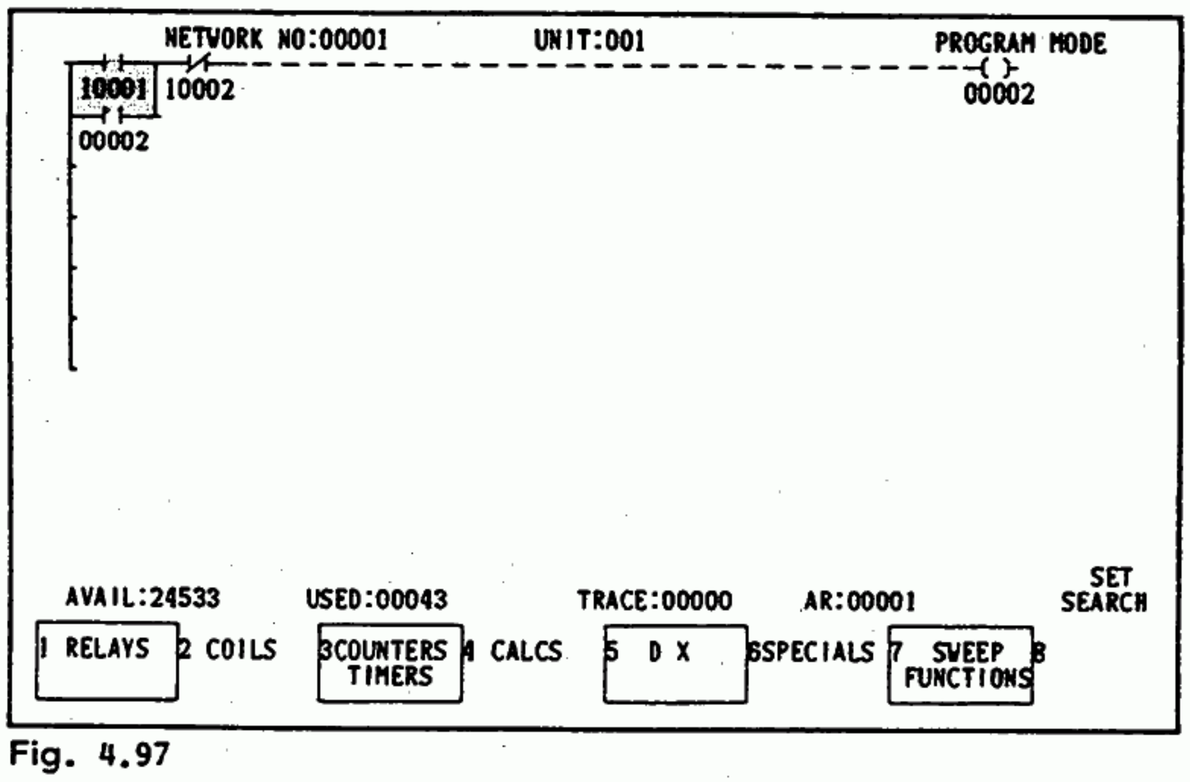


Fig. 4.97

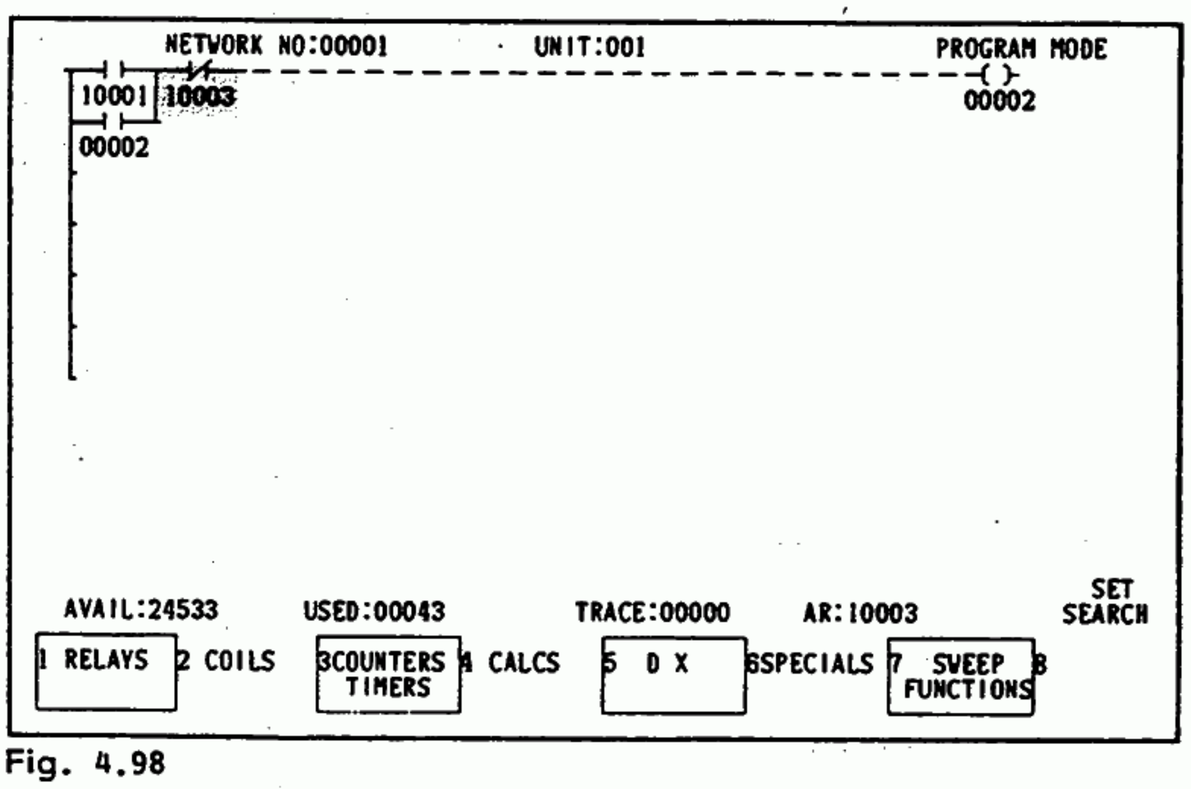


Fig. 4.98

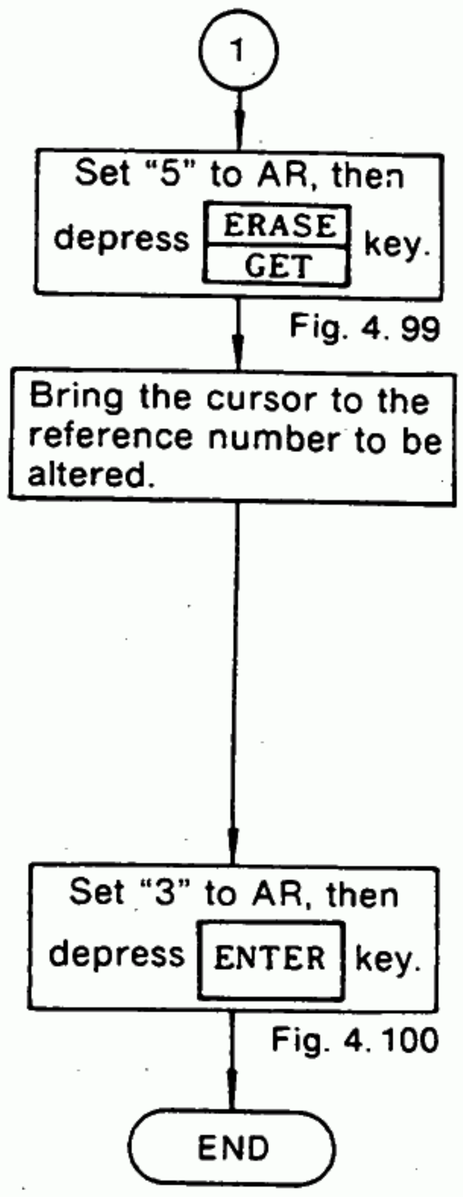


Fig. 4.99

Fig. 4.100

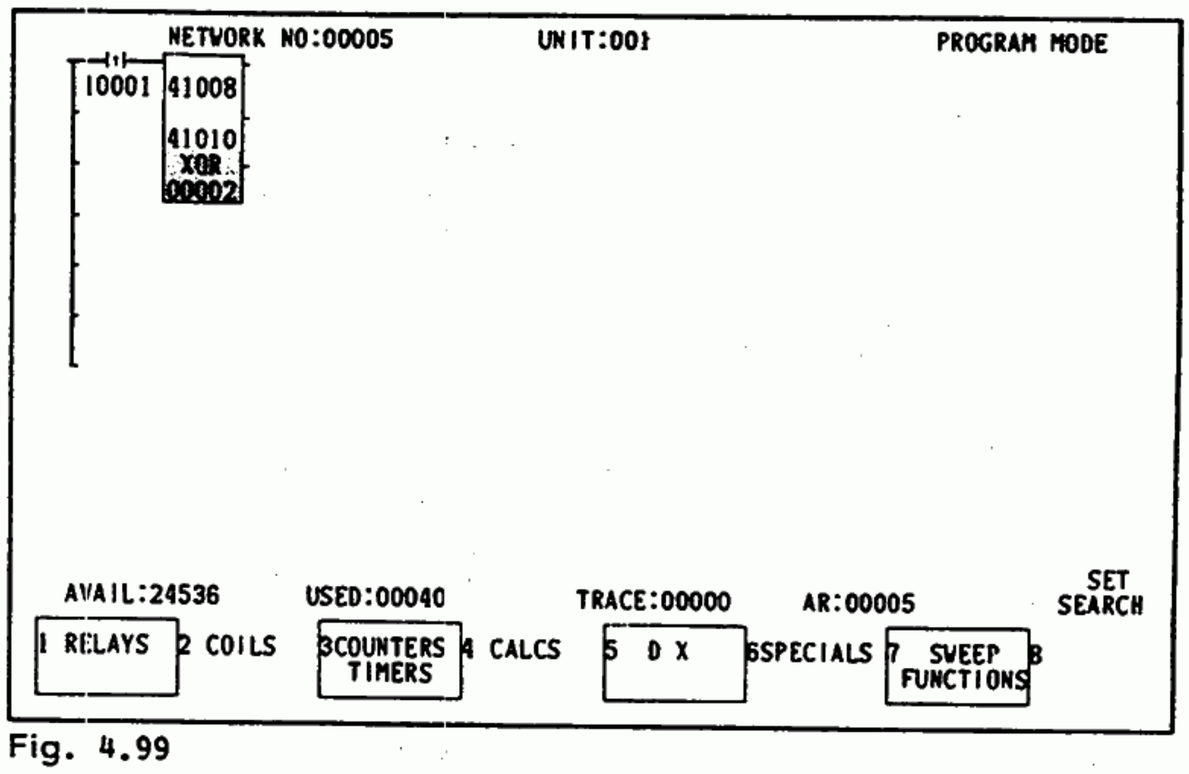


Fig. 4.99

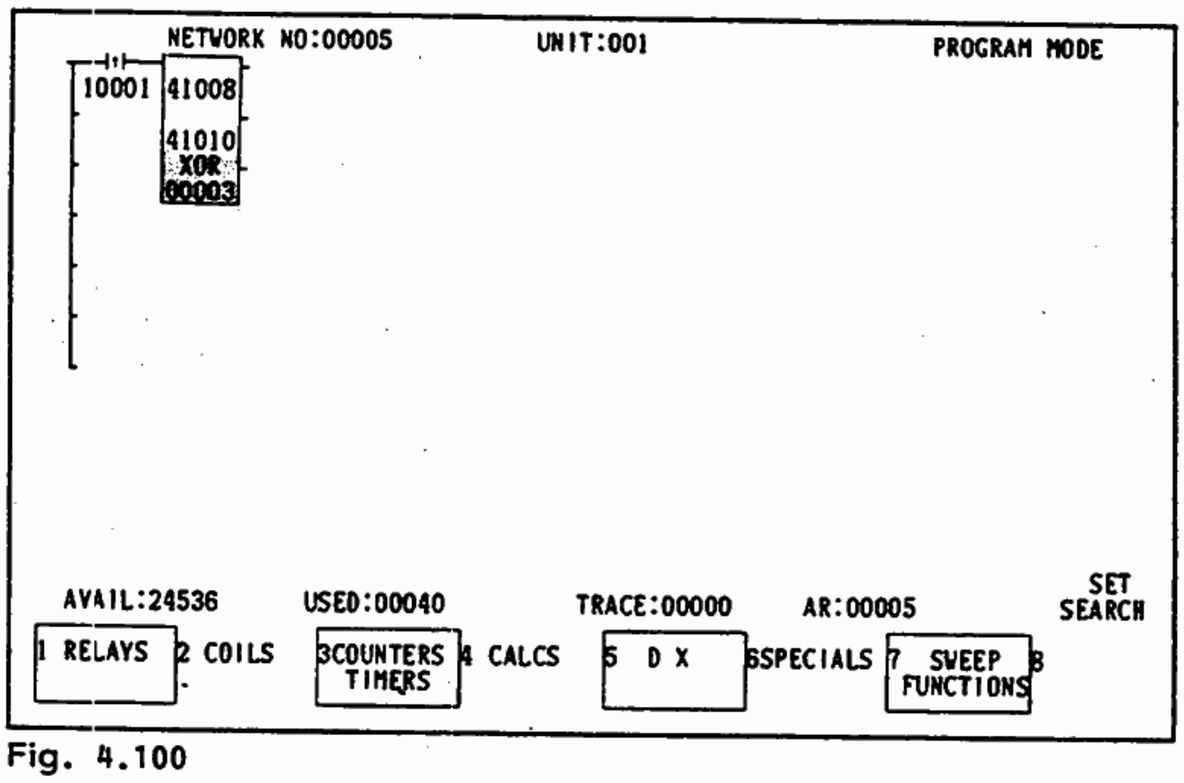


Fig. 4.100

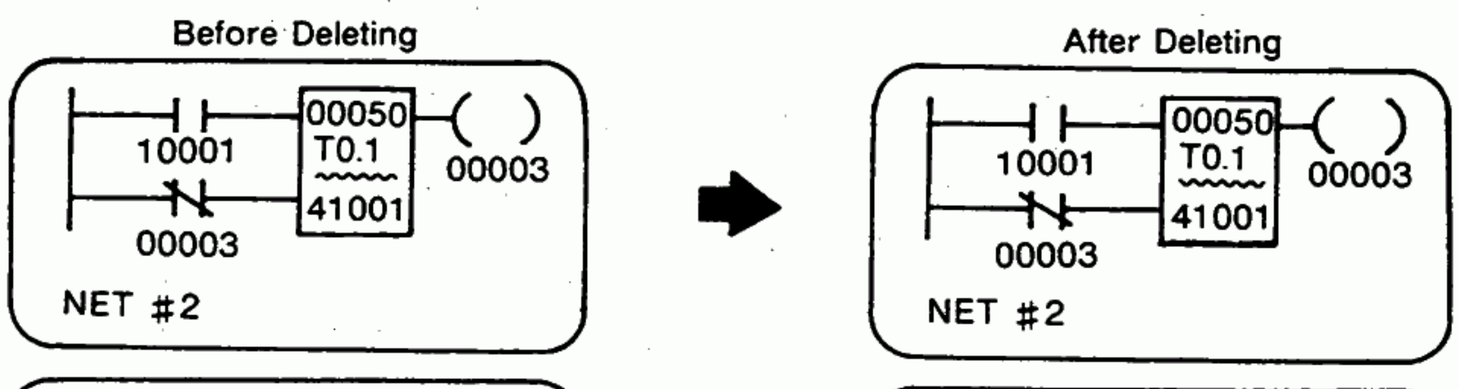
NOTE

When ATTACH operation has already been completed, this step can be skipped.

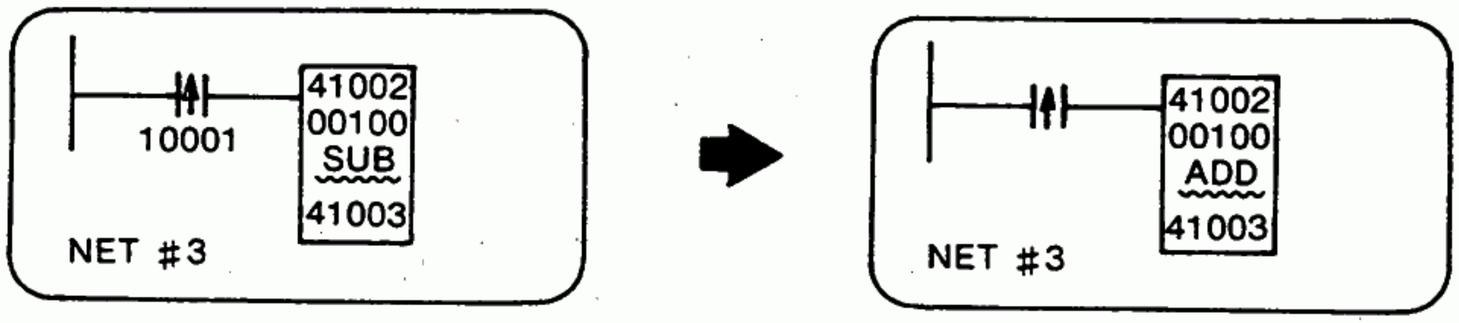
PROGRAM MODE

(2) SYMBOL ALTERING ①

Sample Timer Rate Altering



Sample Arithmetic Altering (Subtraction →Addition)



POINT · The cursor should be placed in the logic area.

START

NOTE 1
Perform ATTACH operation.

Set "2" to AR, then depress ERASE / GET key.

Bring the cursor to the timer element position.

Depress COUNTERS TIMERS key.

Depress T1.0 key.

T0.1 is altered to T1.0. (Fig. 4.102)

1

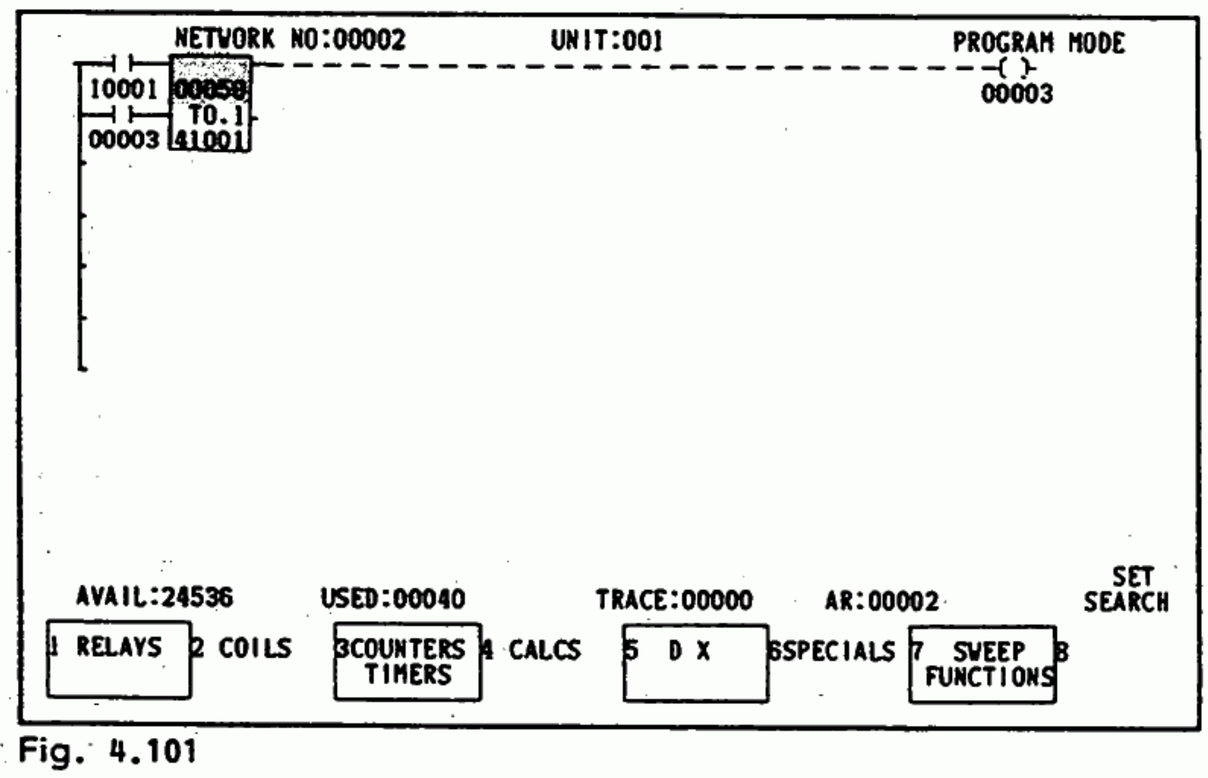


Fig. 4.101

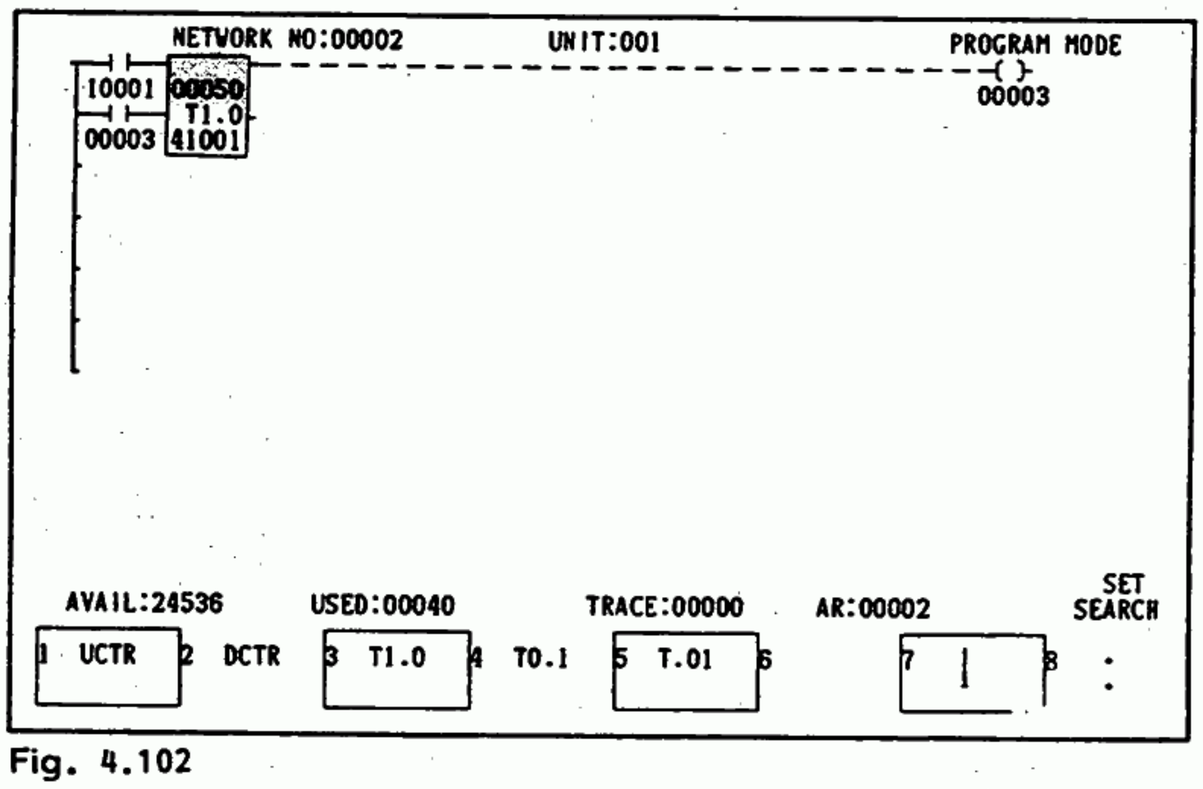
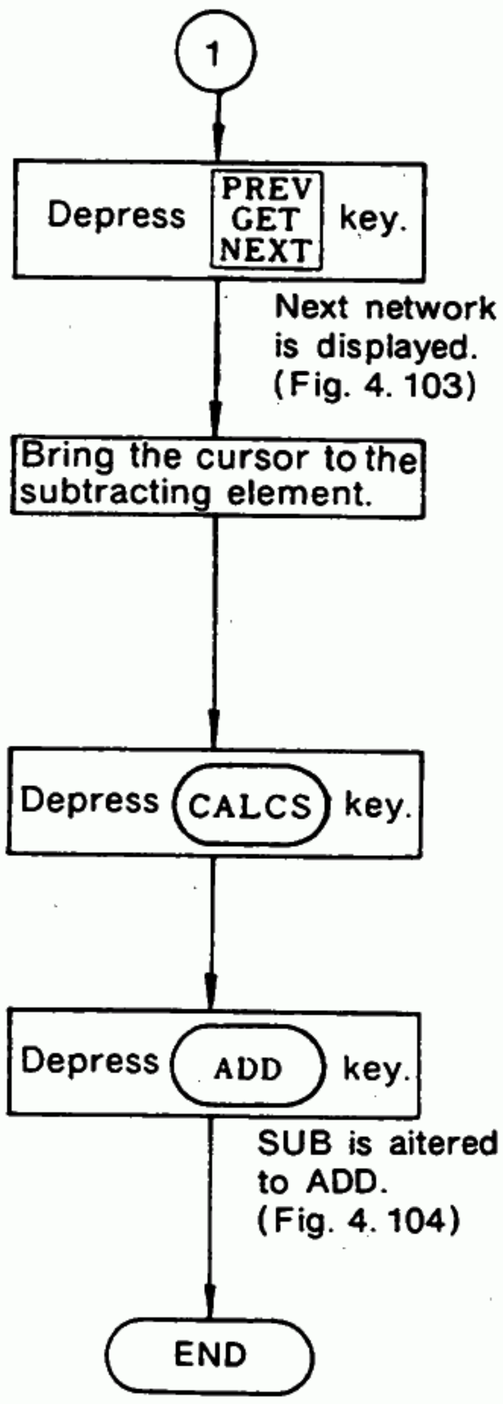


Fig. 4.102



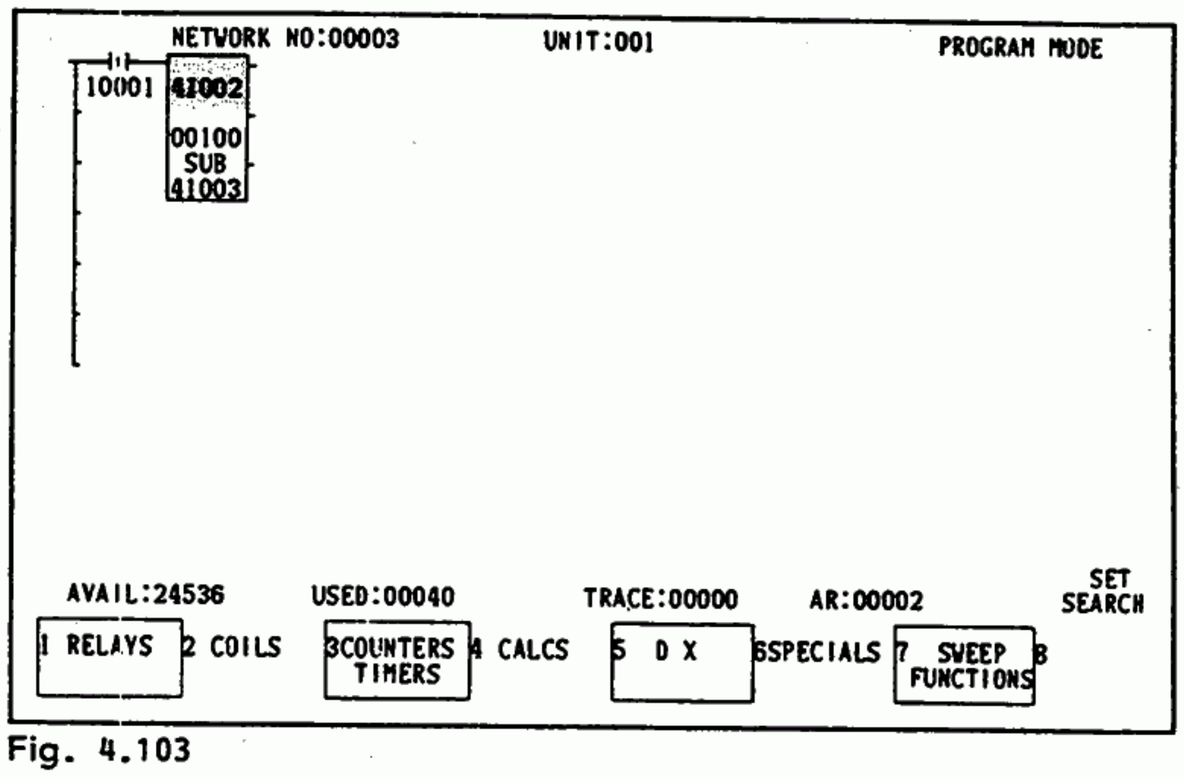


Fig. 4.103

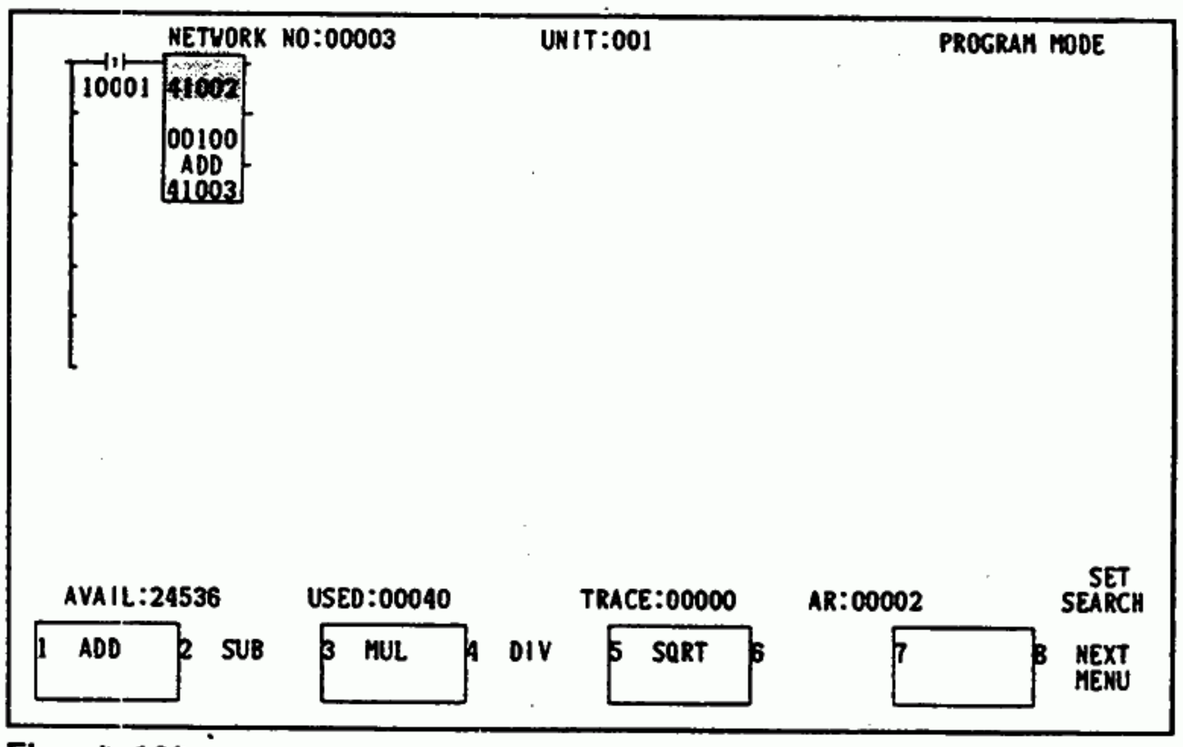


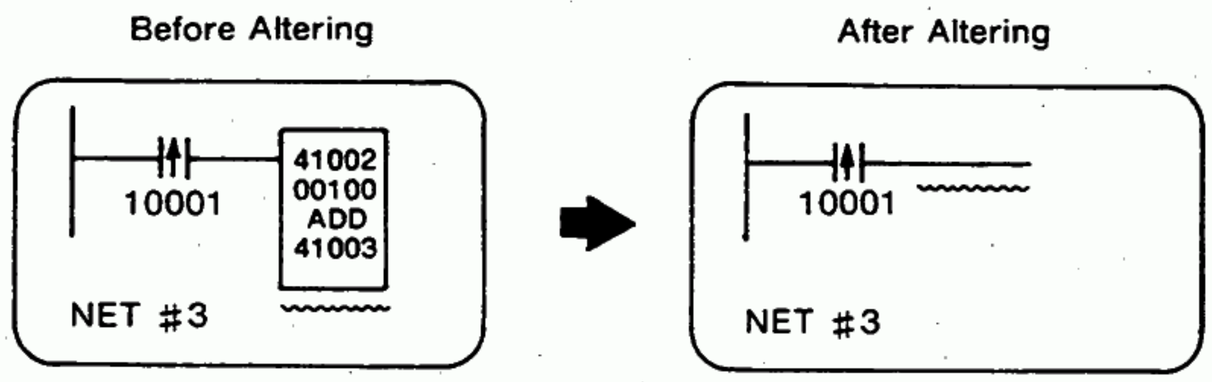
Fig. 4.104

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. If the error message "INVALID REPLACEMENT" is displayed, a symbol cannot be altered directly. In this case, perform deleting operation by depressing NTWK DELETE NODE key, and store new element in CPU.

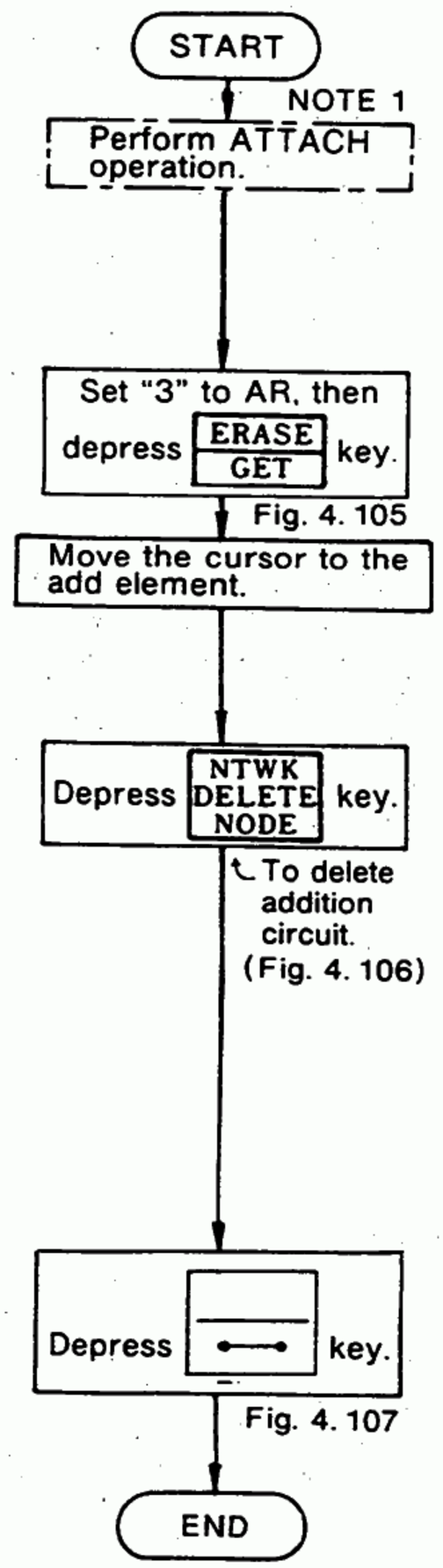
(2) SYMBOL ALTERING ②

Sample Altering (Addition → Horizontal Short)



POINT

· The cursor should be placed in the logic area.



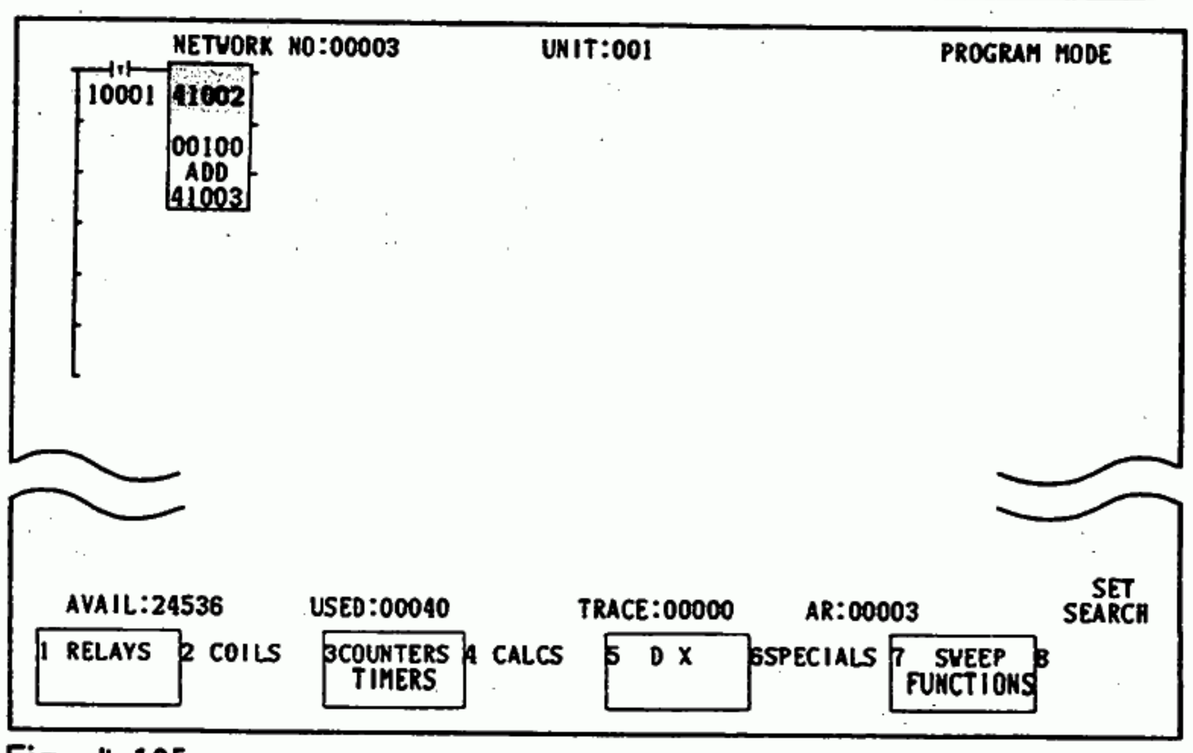


Fig. 4.105

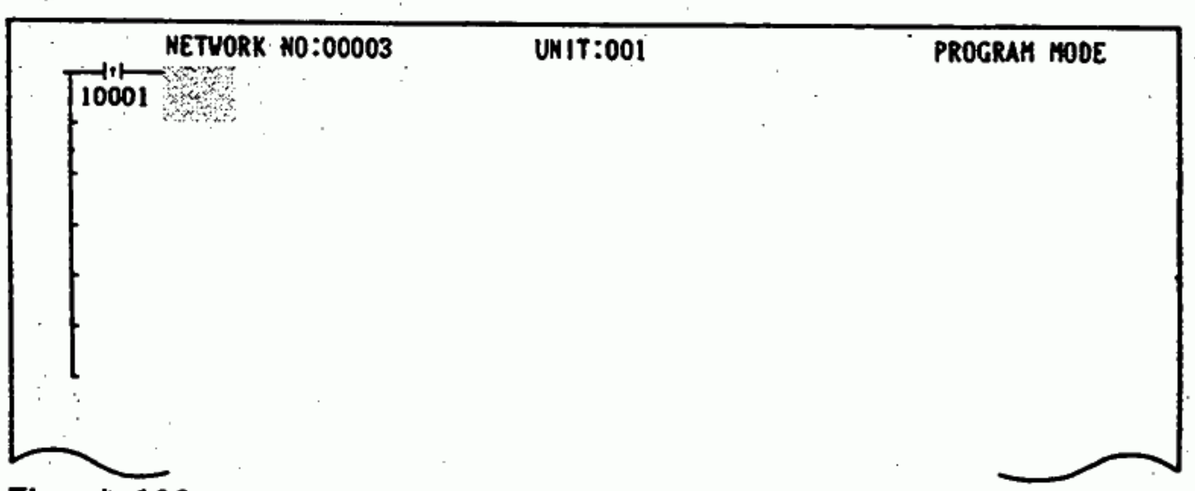


Fig. 4.106

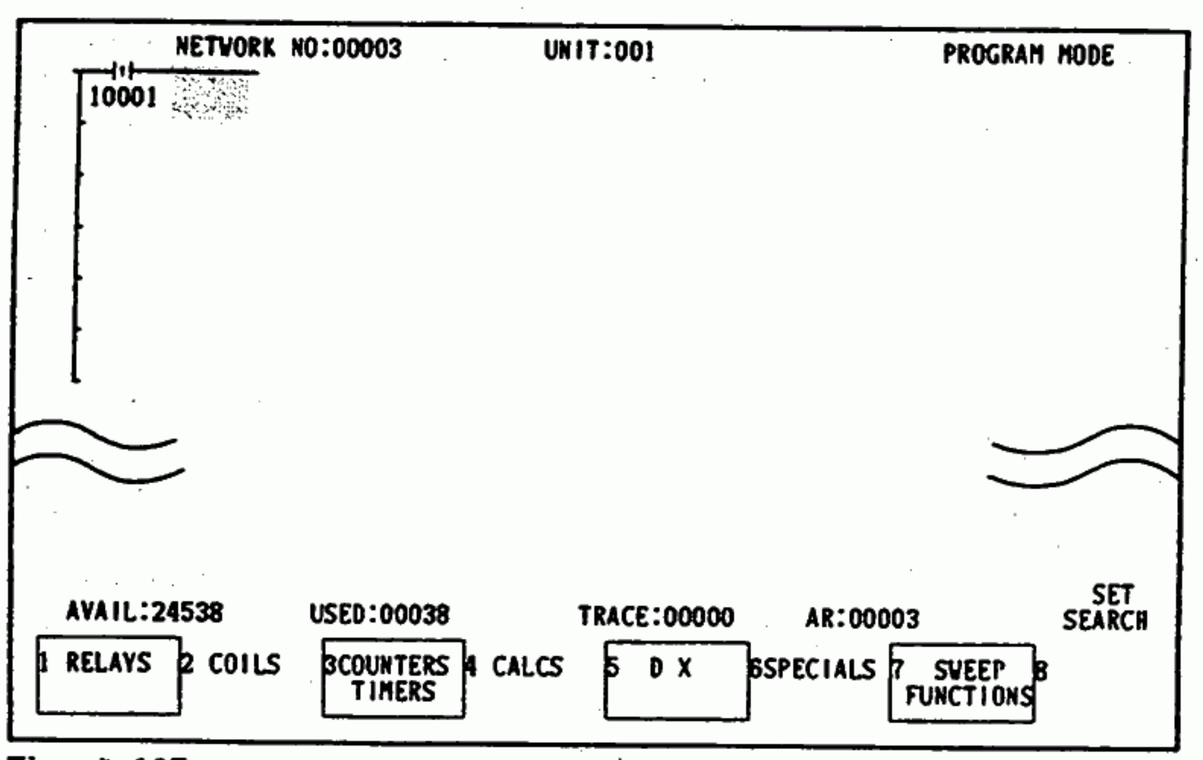


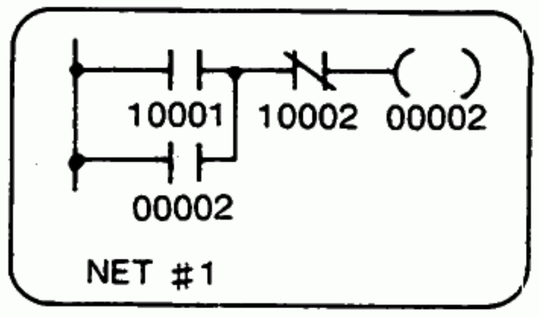
Fig. 4.107

NOTE

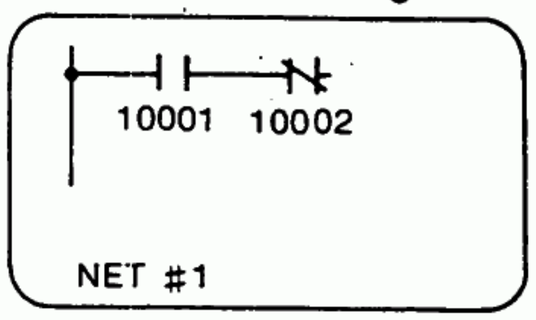
1. When ATTACH operation has already been completed, this step can be skipped.
2. The label keys are also available for storing of horizontal short.

(3) ELEMENT DELETING

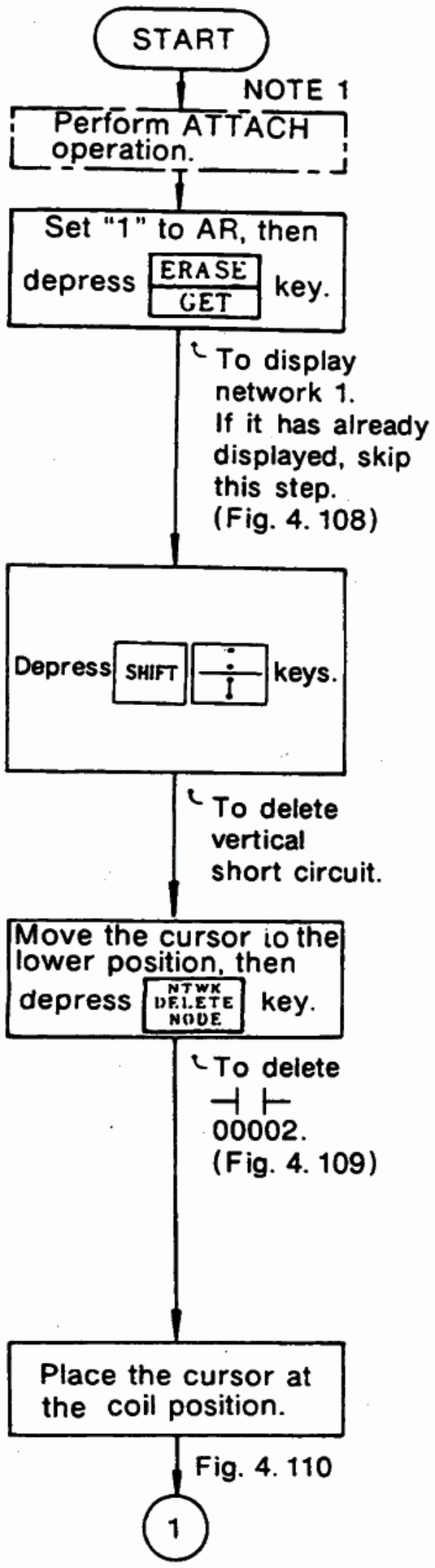
Before Deleting



After Deleting



POINT · The cursor should be placed in the logic area.



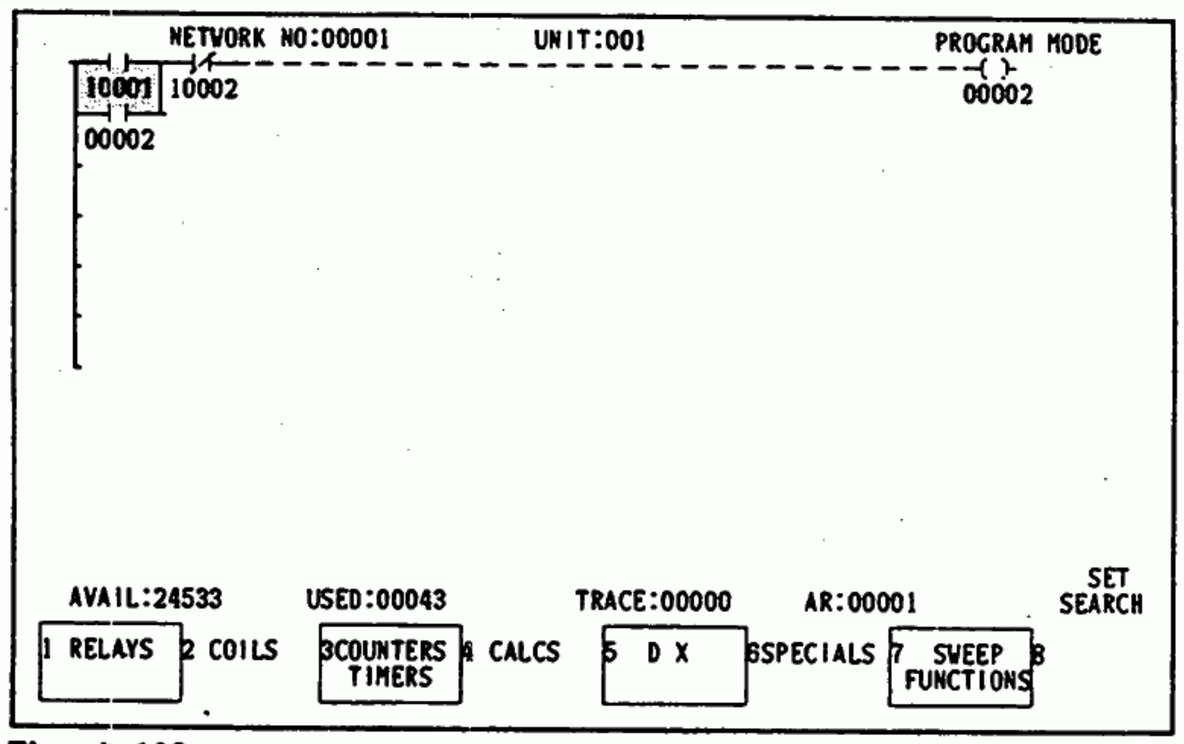


Fig. 4.108

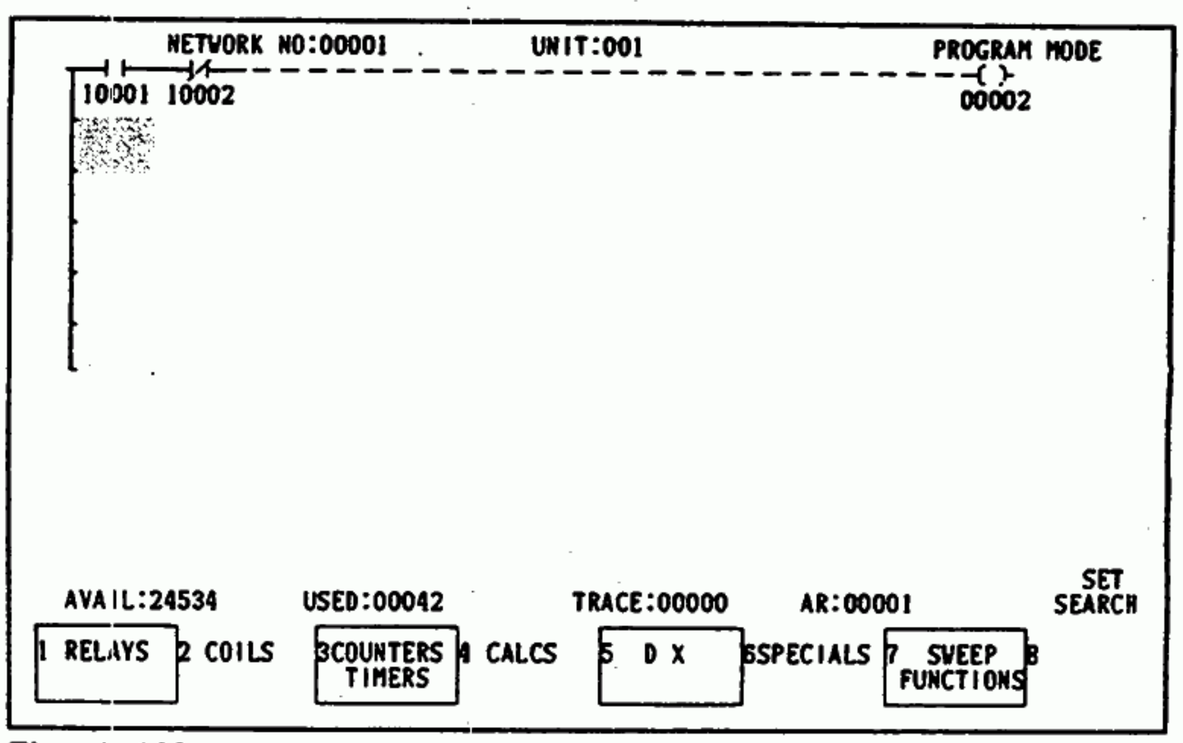


Fig. 4.109

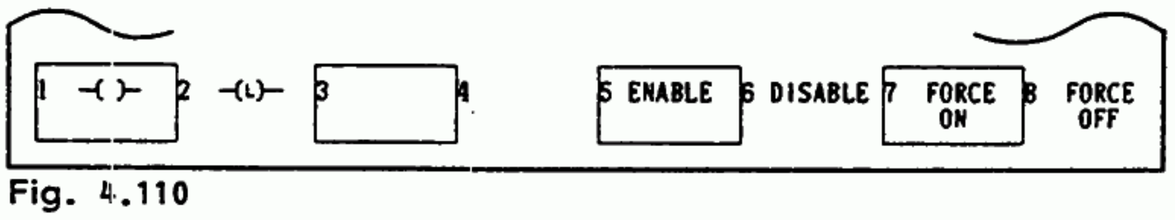


Fig. 4.110

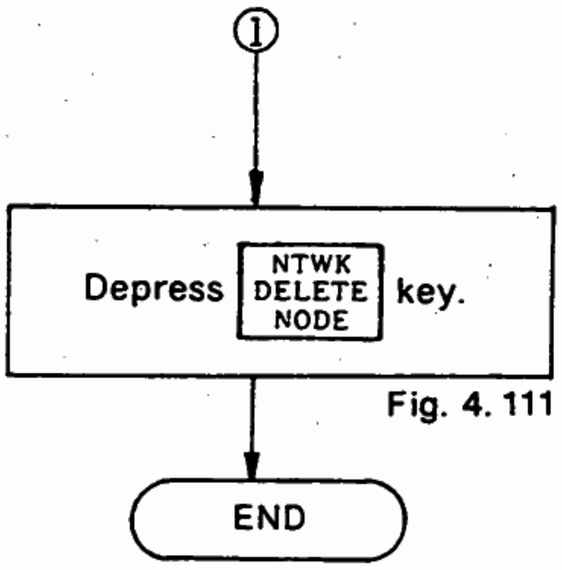


Fig. 4.111

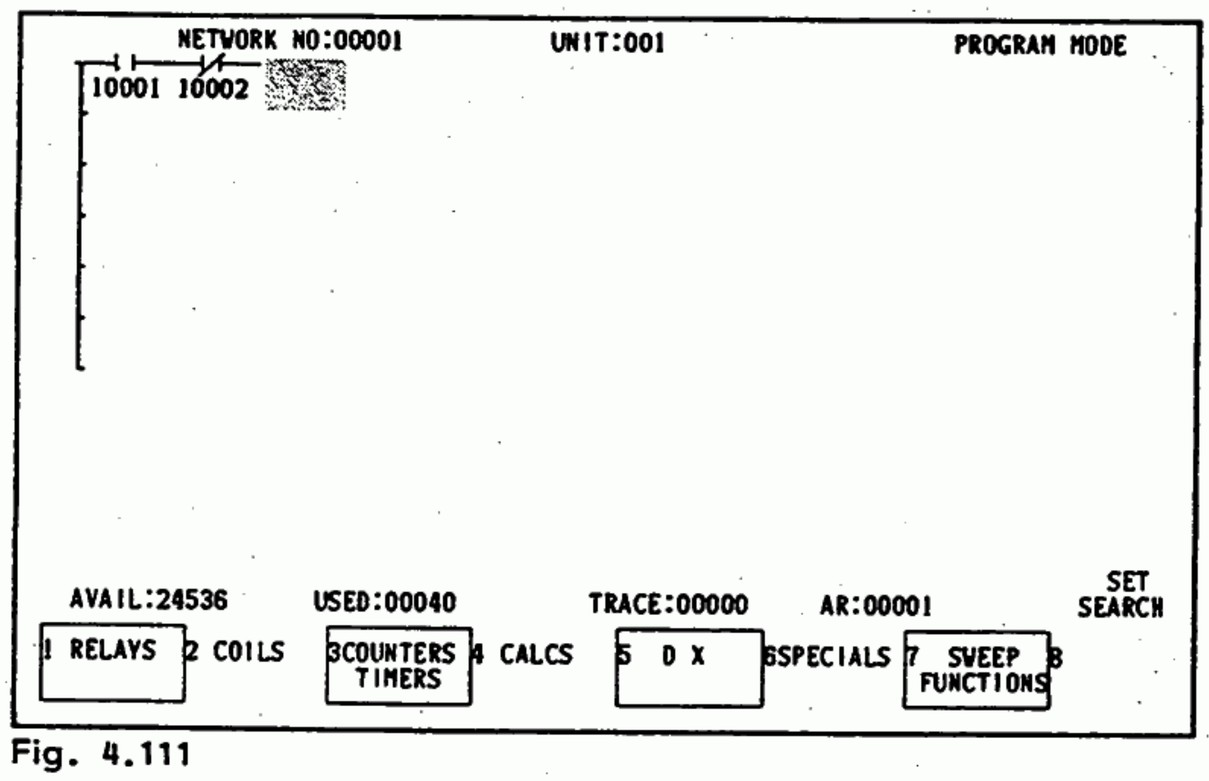


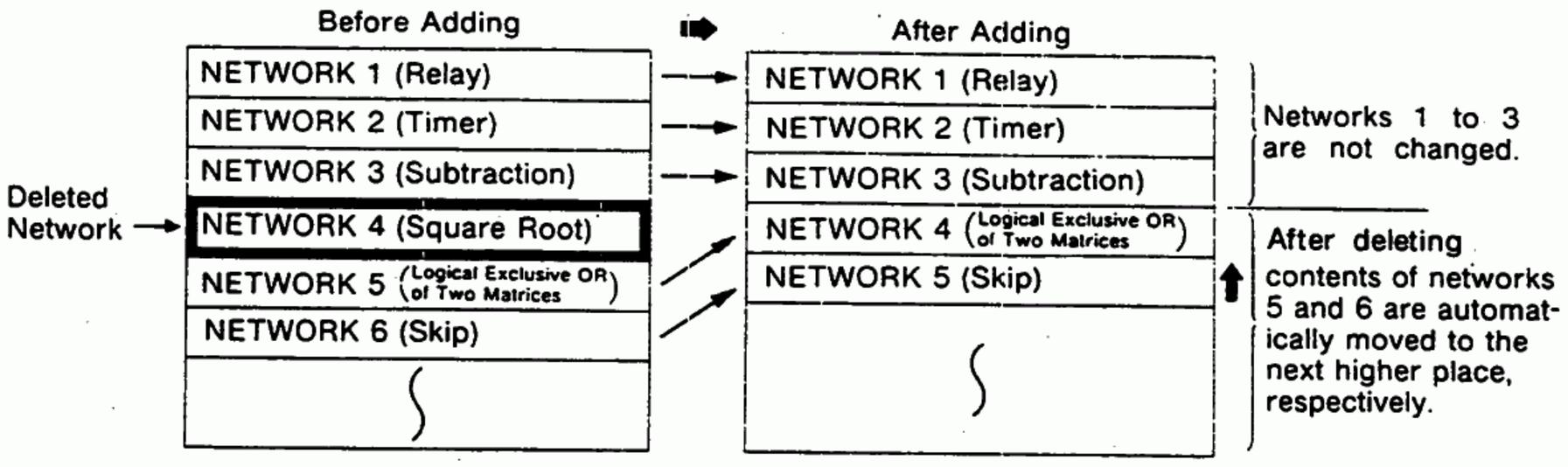
Fig. 4.111

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The label keys are also used to store and delete the vertical short circuit.

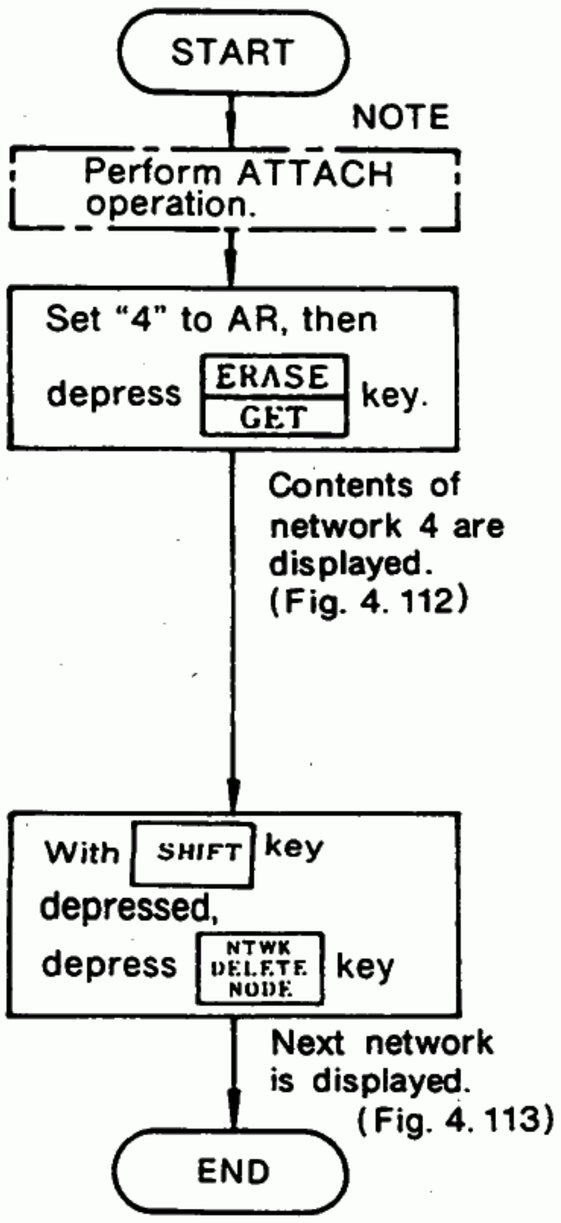
(4) NETWORK DELETING

Sample Network 4 (Square Root) Deleting



POINT

- Display the network to be deleted on the screen, and depress SHIFT, NTWK DELETE NODE keys.
- The cursor should be placed in the logic area.



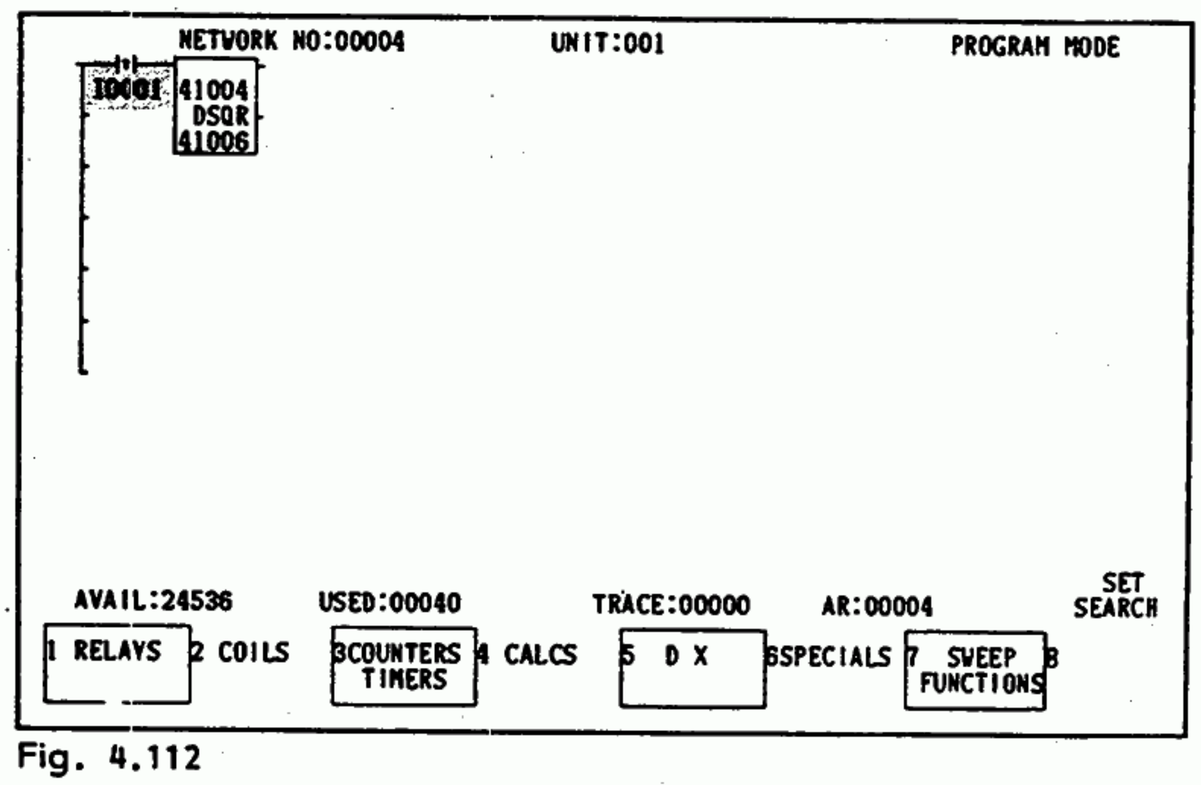


Fig. 4.112

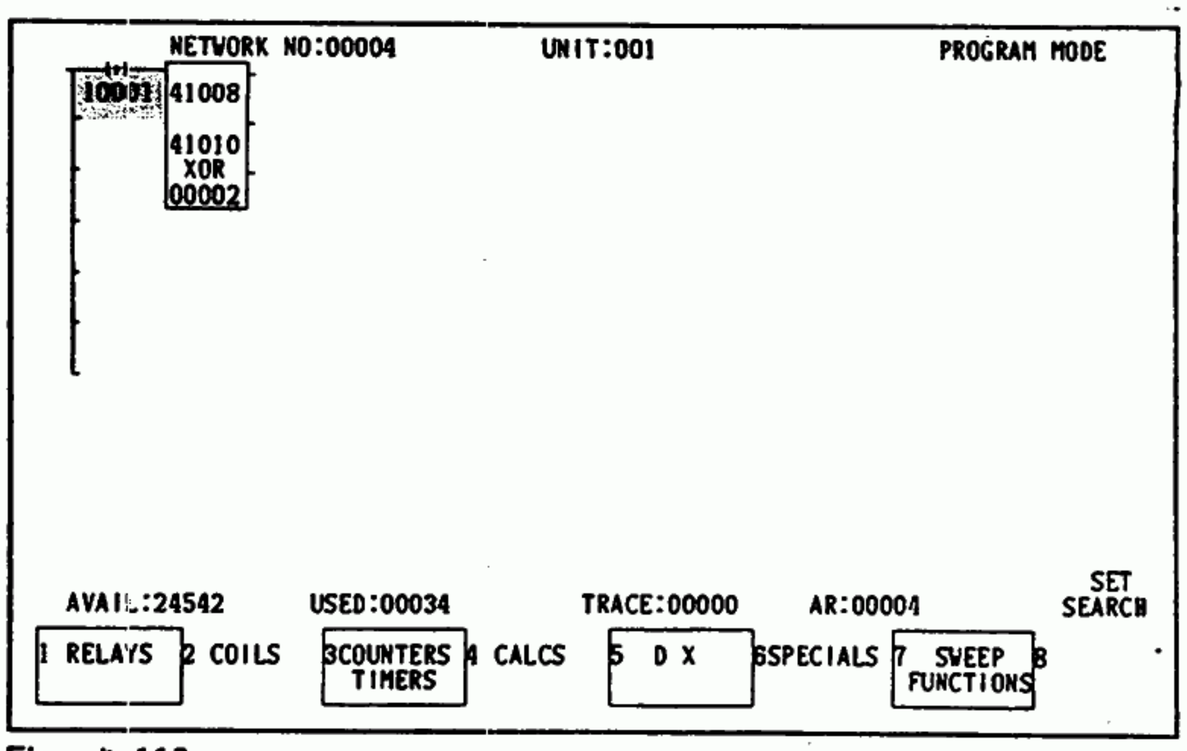


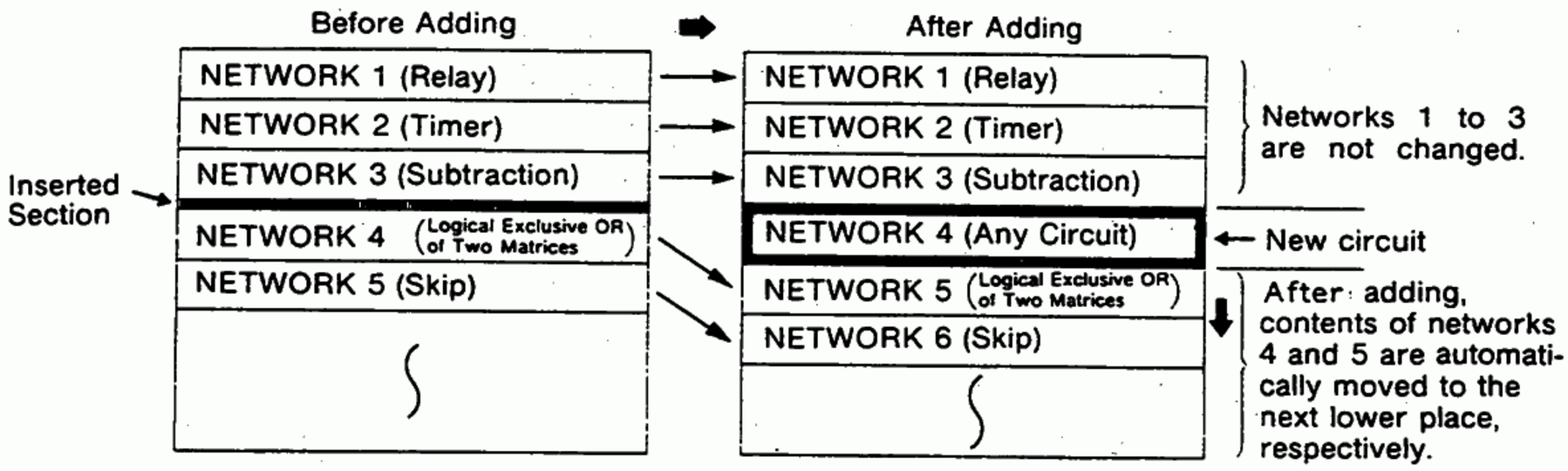
Fig. 4.113

NOTE

When ATTACH operation has already been completed, this step can be skipped.

(5) NETWORK ADDING

Sample New Network Adding



POINT

- Display the previous network number of a network number to be added on the screen, and depress START NEXT key.
- The cursor should be placed in the logic area.

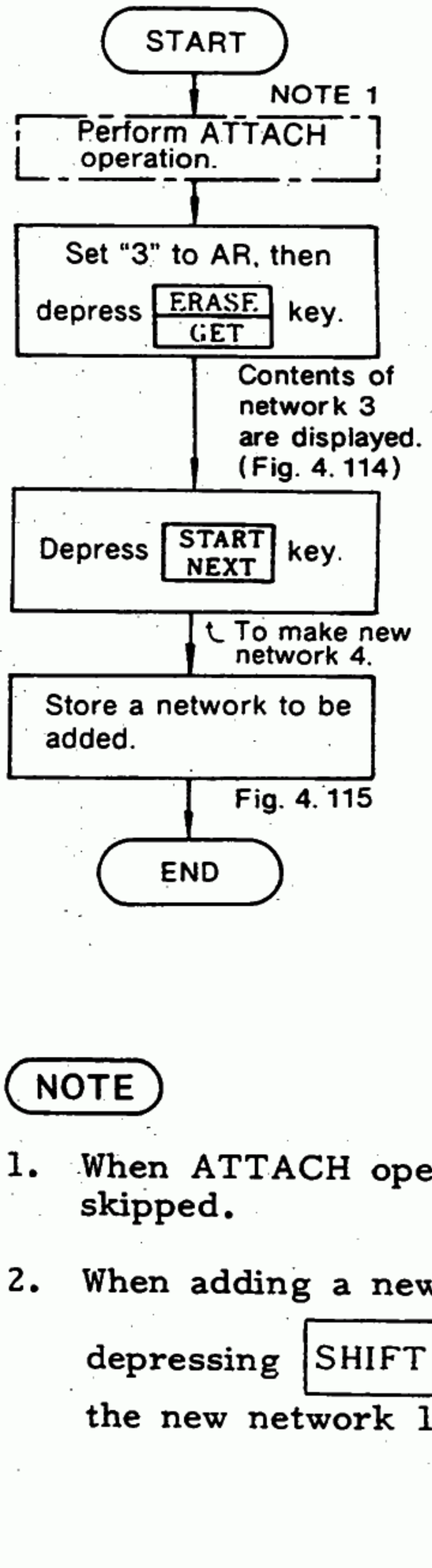


Fig. 4.115

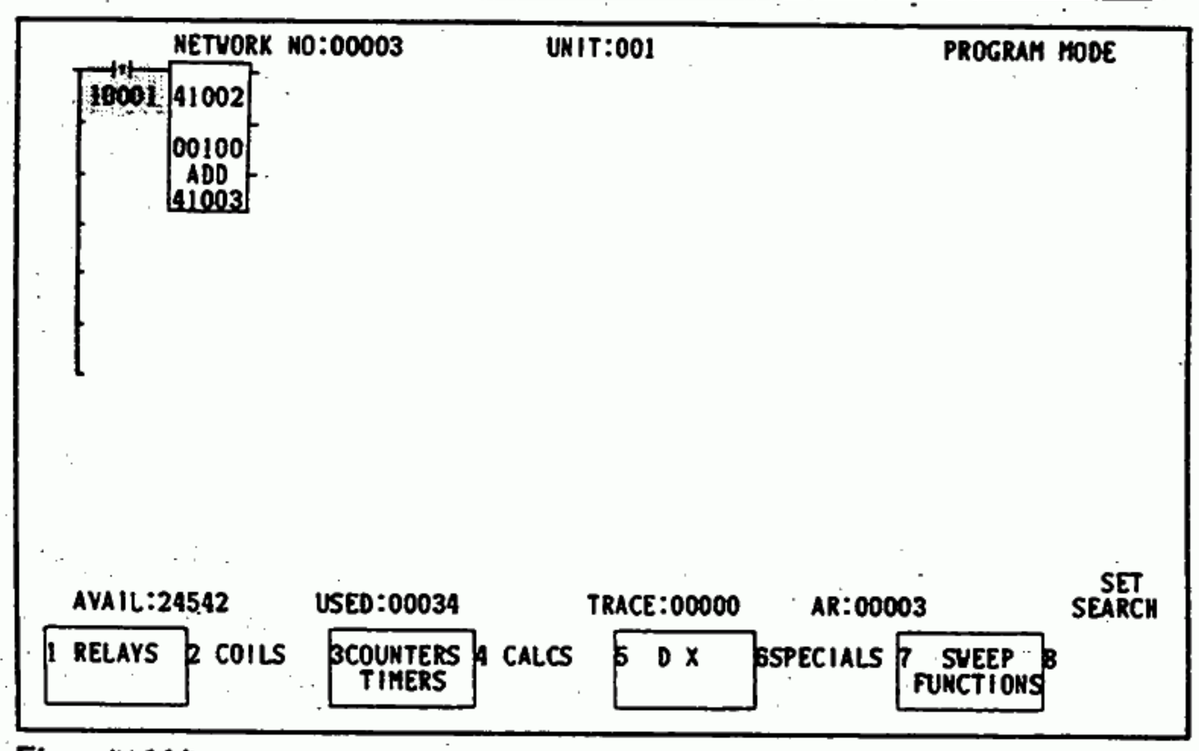


Fig. 4.114

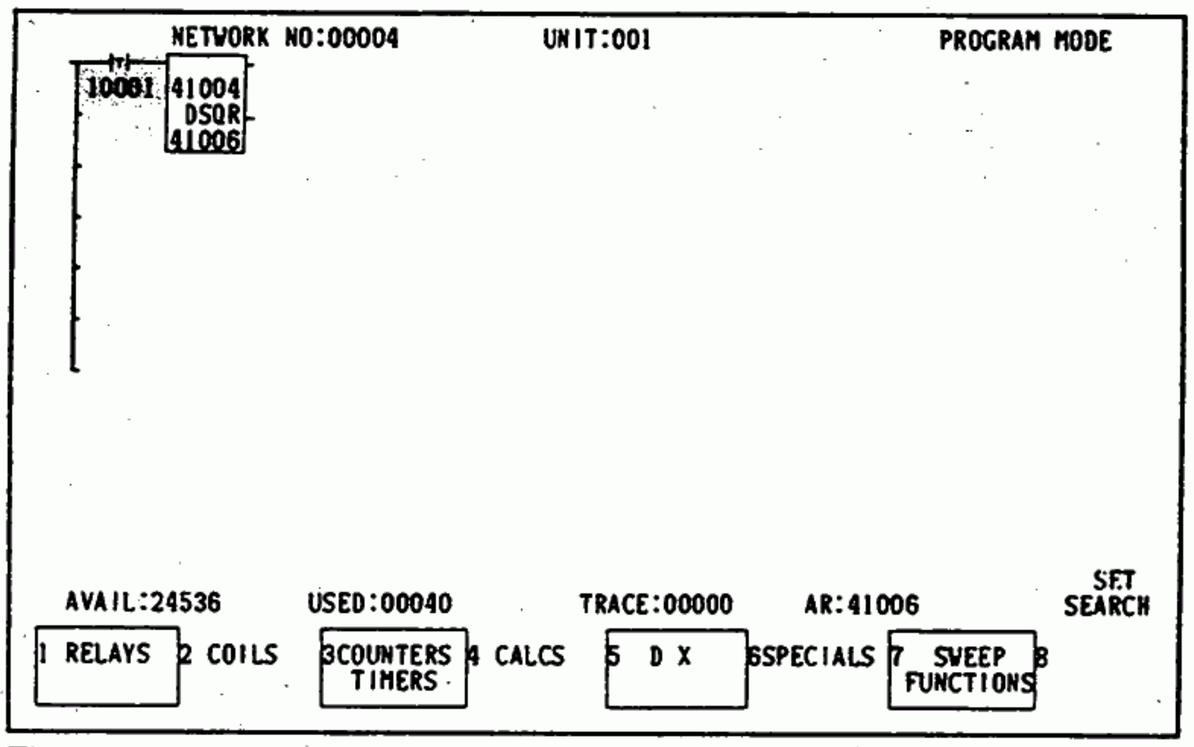


Fig. 4.115

NOTE

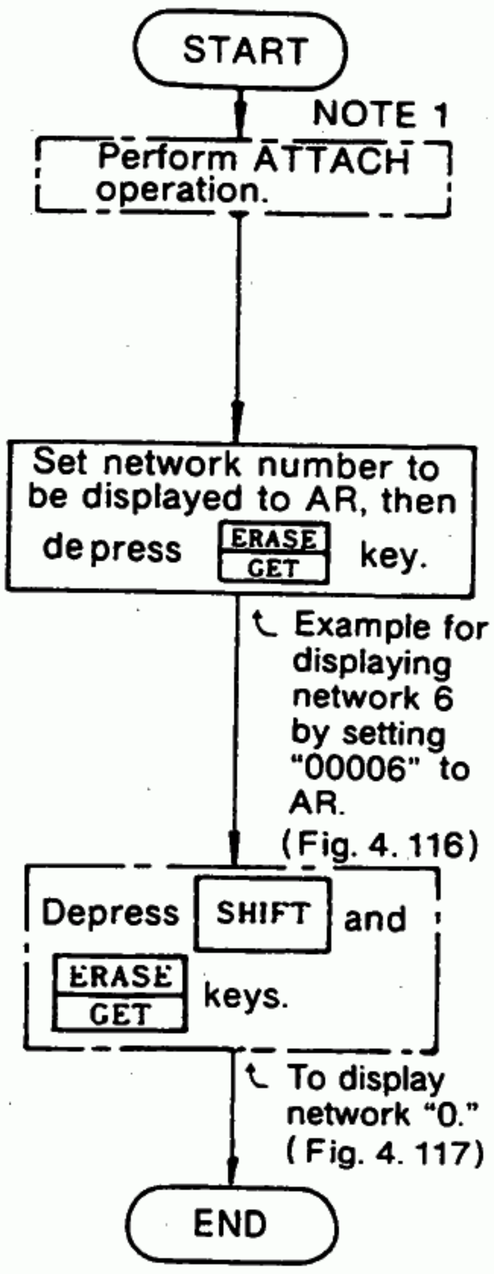
1. When ATTACH operation has already been completed, this step can be skipped.
2. When adding a new network to network 1, display network "0" by depressing SHIFT and ERASE GET keys, then depress START NEXT key to make the new network 1.

4.6.3 NETWORK DISPLAY

(1) ANY NETWORK DISPLAY

This function is used to display any programmed network(with network number) using [ERASE / GET] key.

POINT · The cursor should be placed in the logic area.



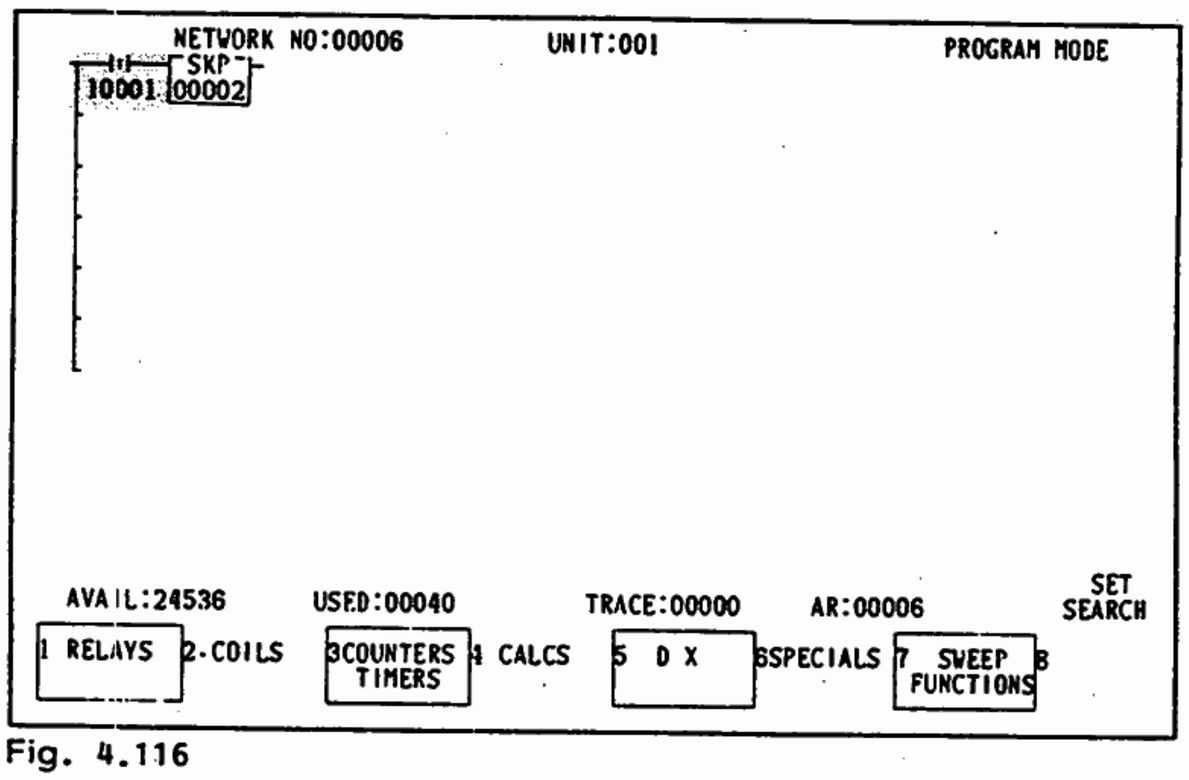


Fig. 4.116

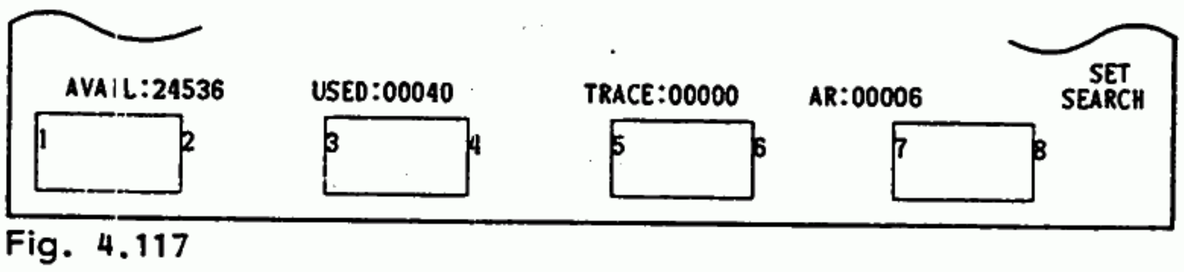


Fig. 4.117

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Network "0" is used to add a new network to the network 1. To make the new network, depress [START / NEXT] key after the network "0" is displayed.
3. By depressing [ERASE / GET] key after setting the value at higher than actual network number, the following message is displayed:
   "NETWORK NOT FOUND HIGHEST #: ×××××"
   ↑ Actual Last Network Number

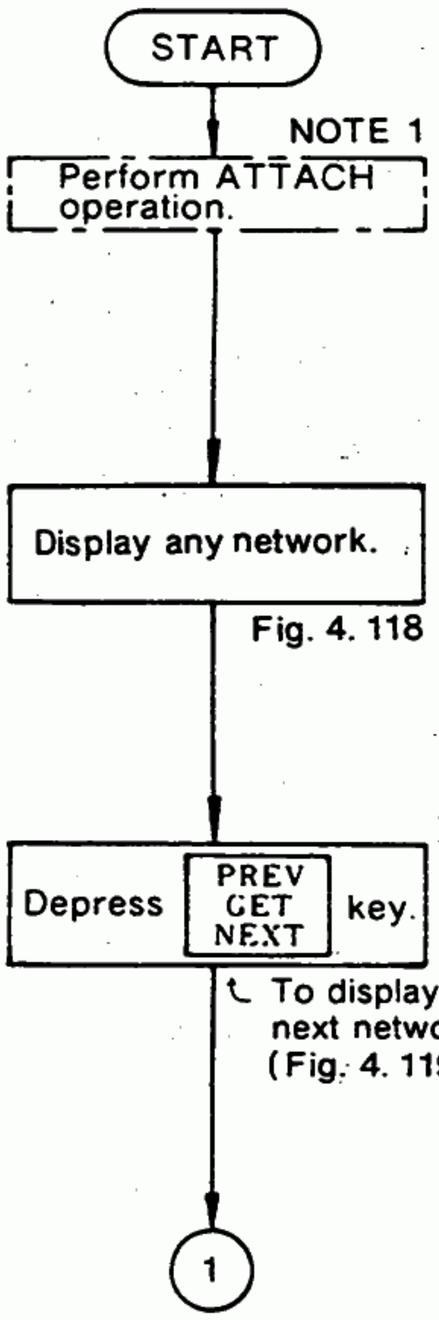
(2) NETWORK CONTINUOUS DISPLAY

This is a function for displaying a network in the network number sequence. The function is used to display the next network or the previous network of the currently displayed network.

- For the next network display: [PREV GET NEXT] key
- For the previous network display: [SHIFT] and [PREV GET NEXT] keys

POINT

- The cursor should be placed in the logic area.



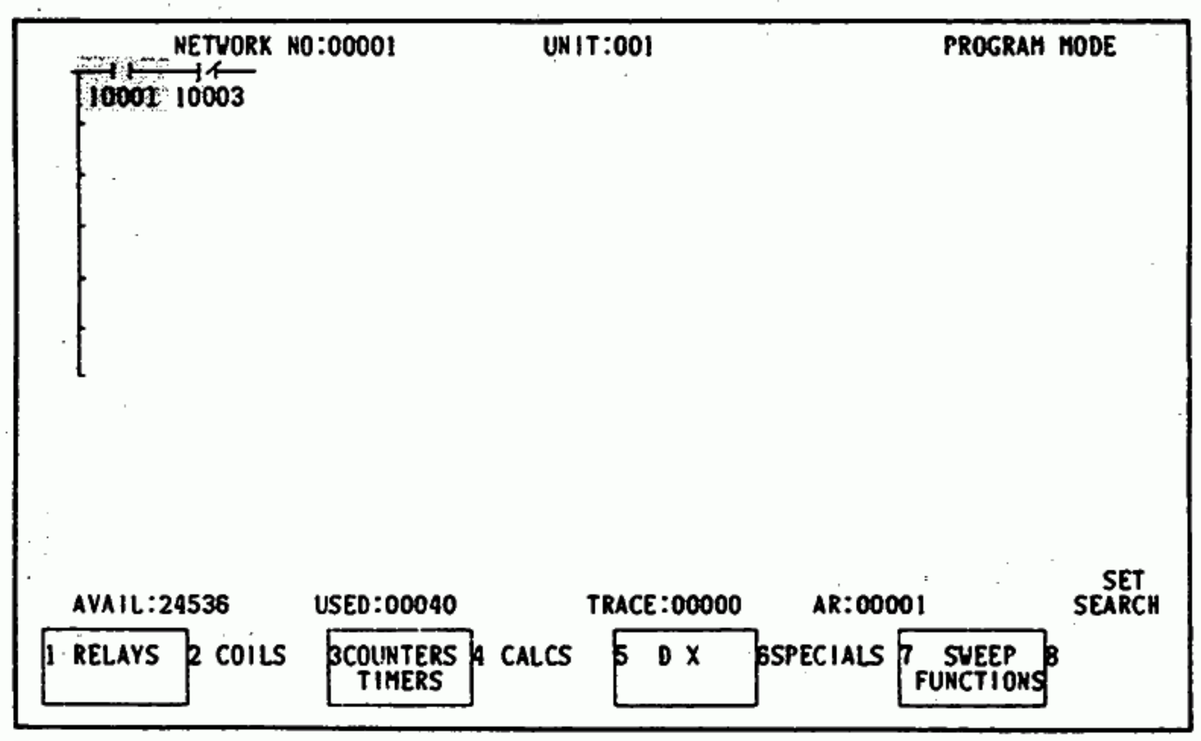


Fig. 4.118

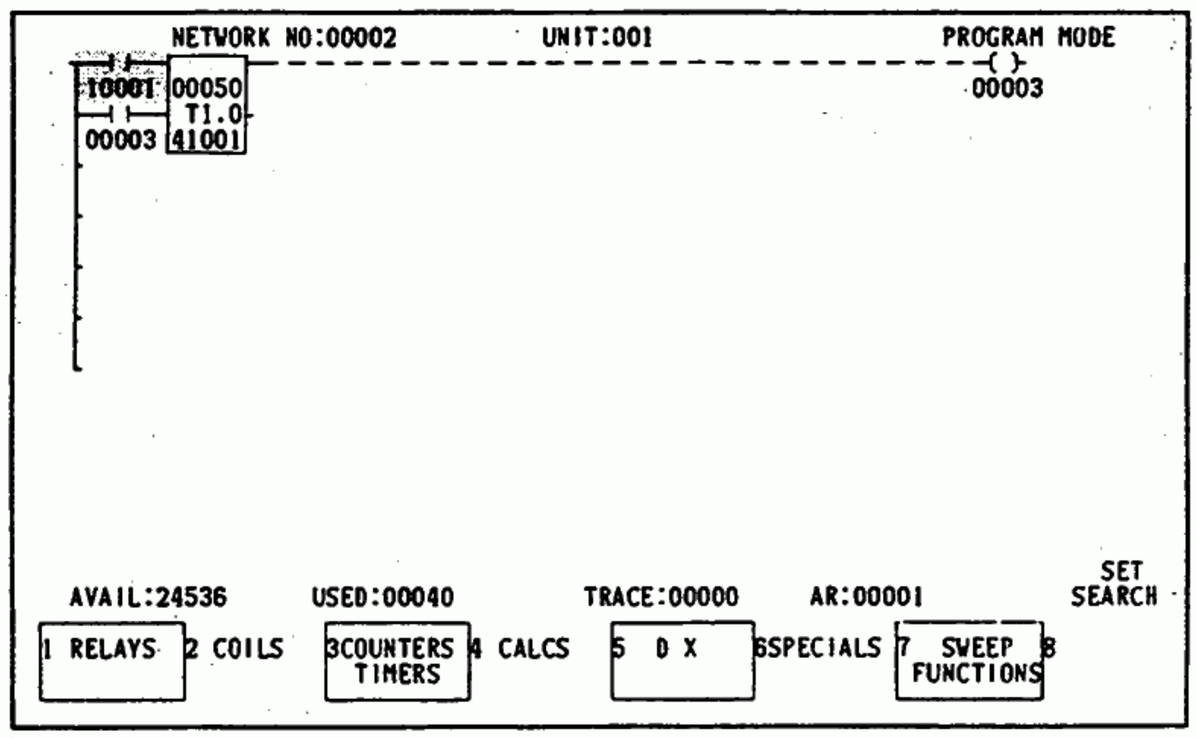


Fig. 4.119

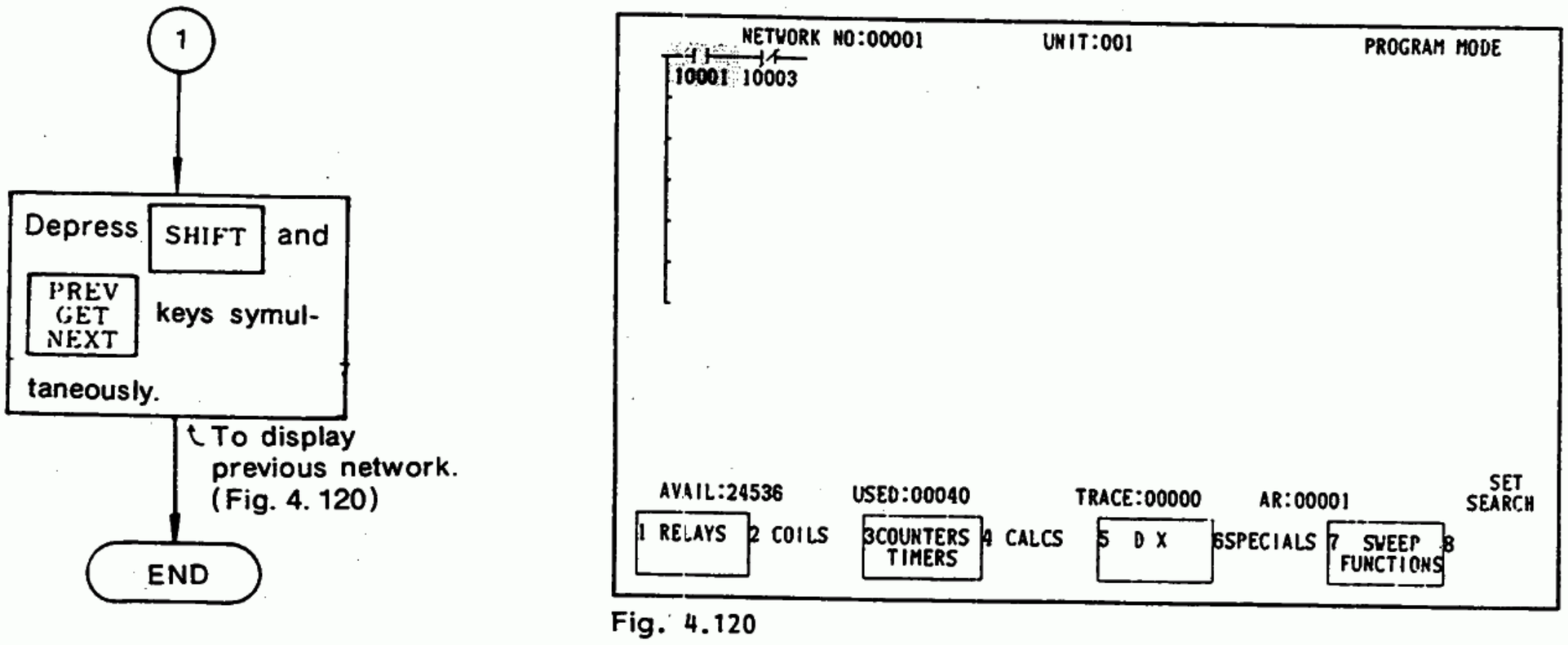


Fig. 4.120

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. The power flow is displayed only while U84 is in operation. However, the power flow of the skipped networks is not displayed even while U84 is running.
3. The power flow advances from left to right, and both upward and downward, and does not necessarily represent the current flow state through the contacts.

(3) POWER FLOW DISPLAY

When networks are displayed, some portions are shown in heavy lines. These are called power flow displays, and they indicate the extent of energization (through what paths and to what elements) from the power source line at the left end.

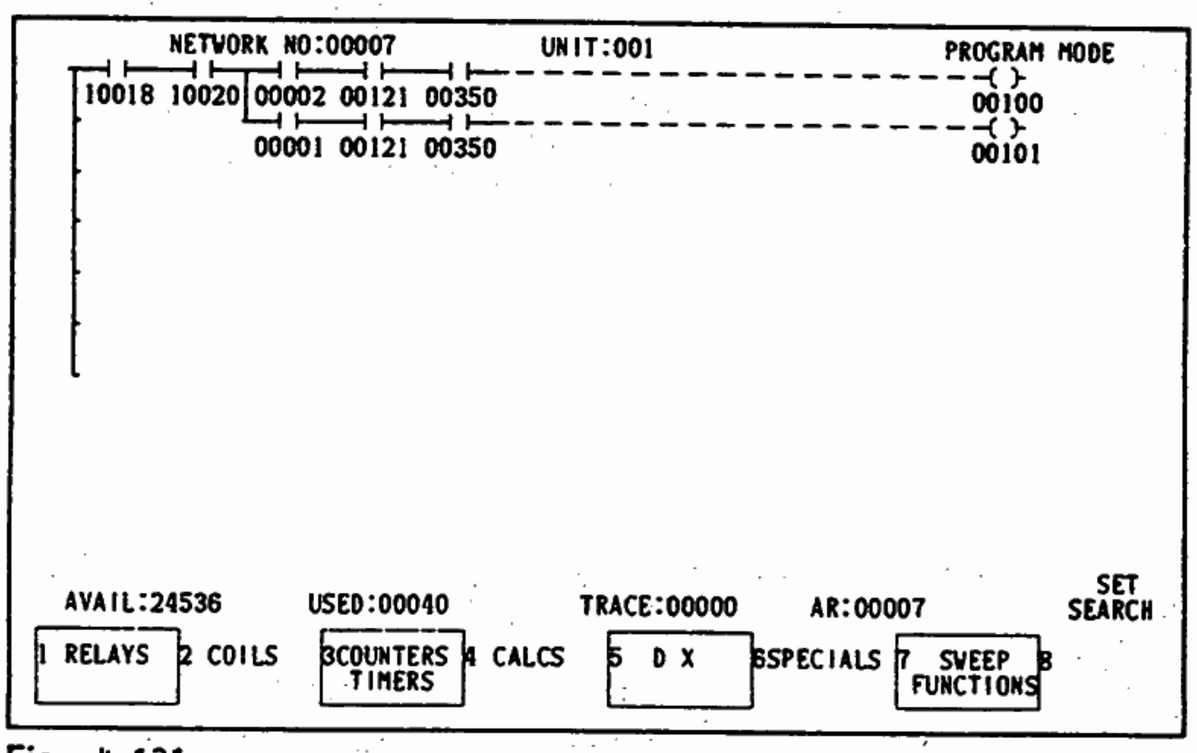


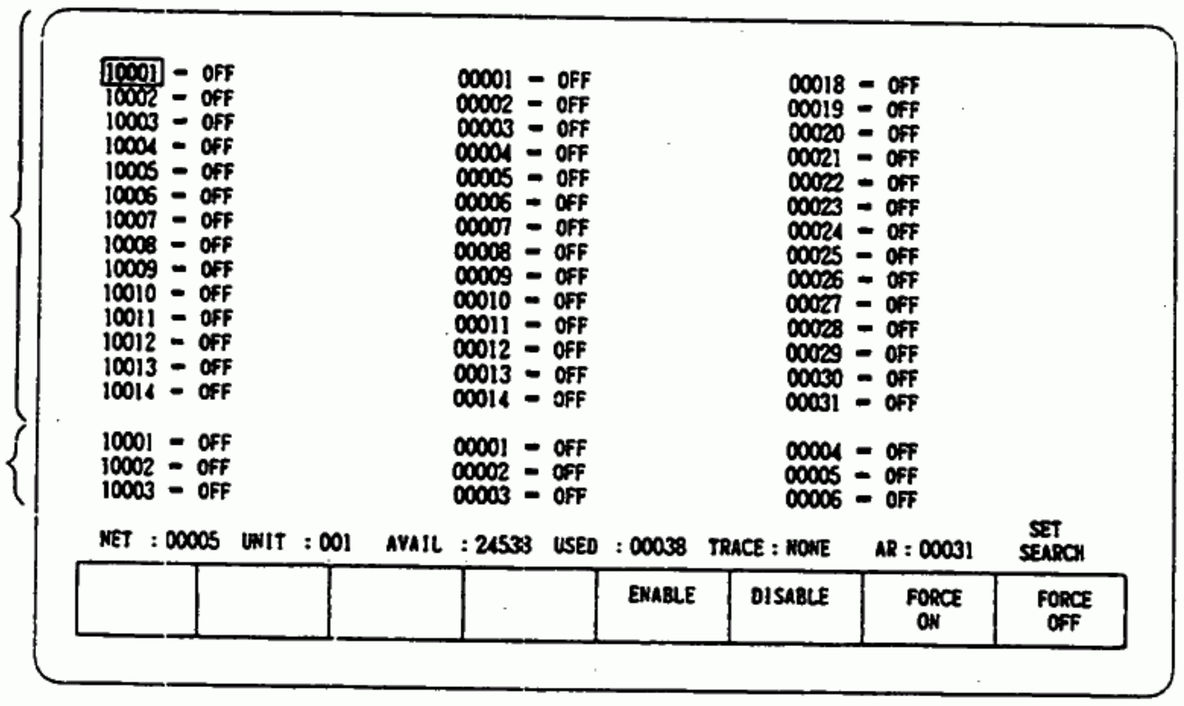
Fig. 4.121

(1) STATUS DISPLAY OF COIL, INPUT RELAY ①

ON and OFF Status of Coils and Input Relays, and Disable Status

Expanding Reference Area: 42 Max (14 Lines × 3 Columns)

Reference Area: 9 Max (3 Lines × 3 Columns)



POINT

- The cursor should be placed in the expanding reference area.
- The cursor moves from logic area to reference area at SRCH⇨ / TAB⇩⇧ key depression.

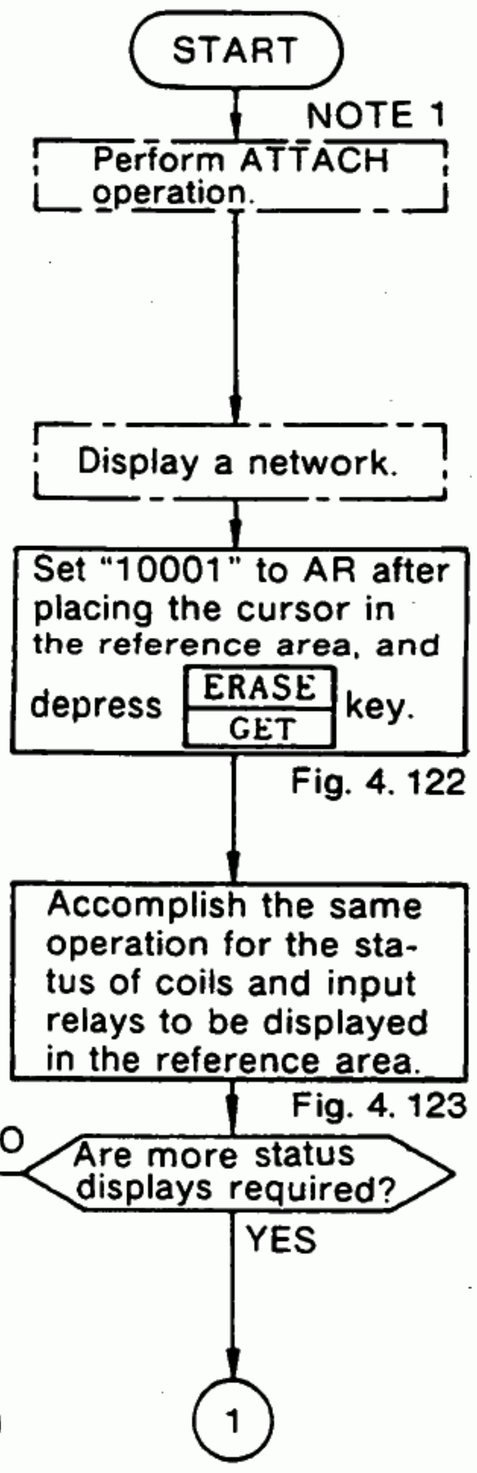


Fig. 4.122

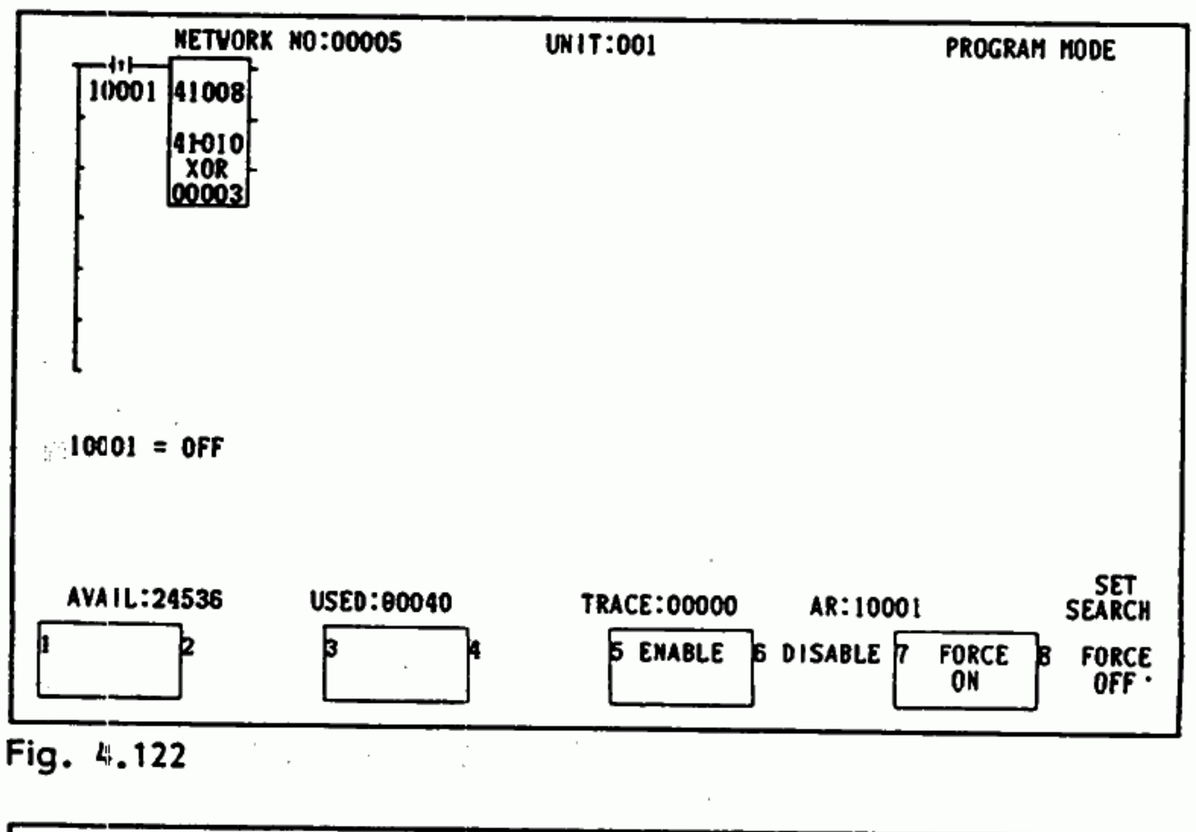
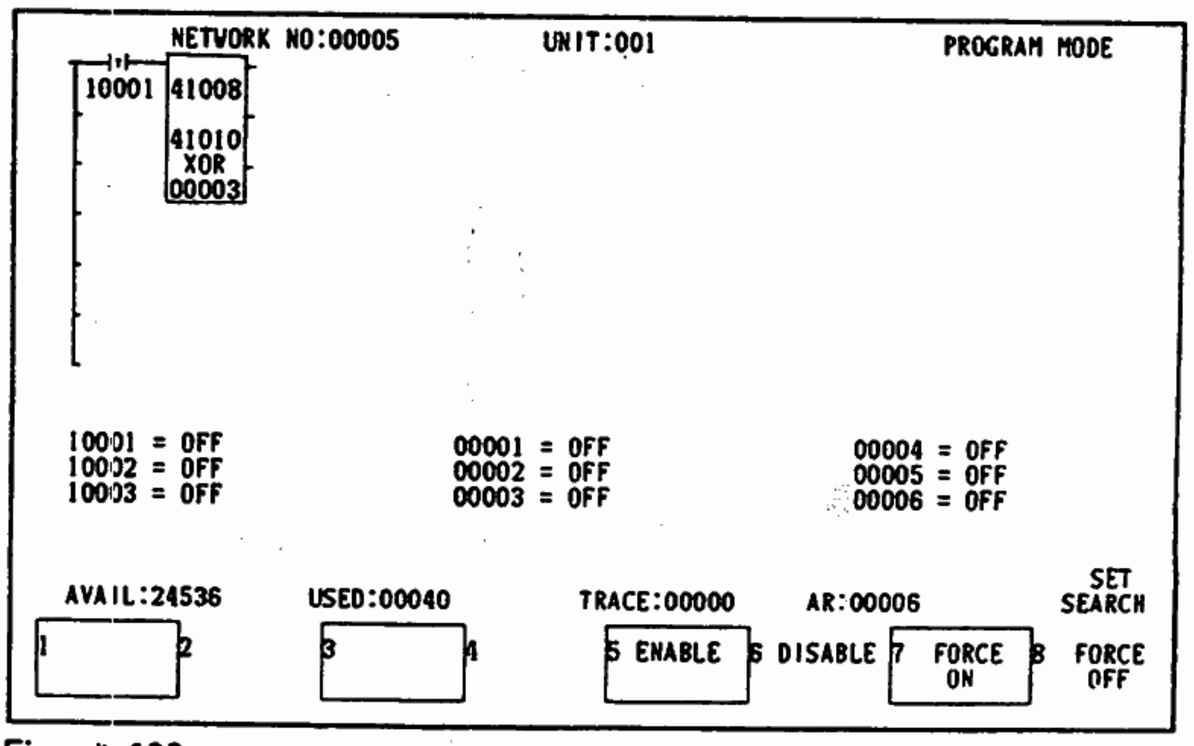


Fig. 4.123



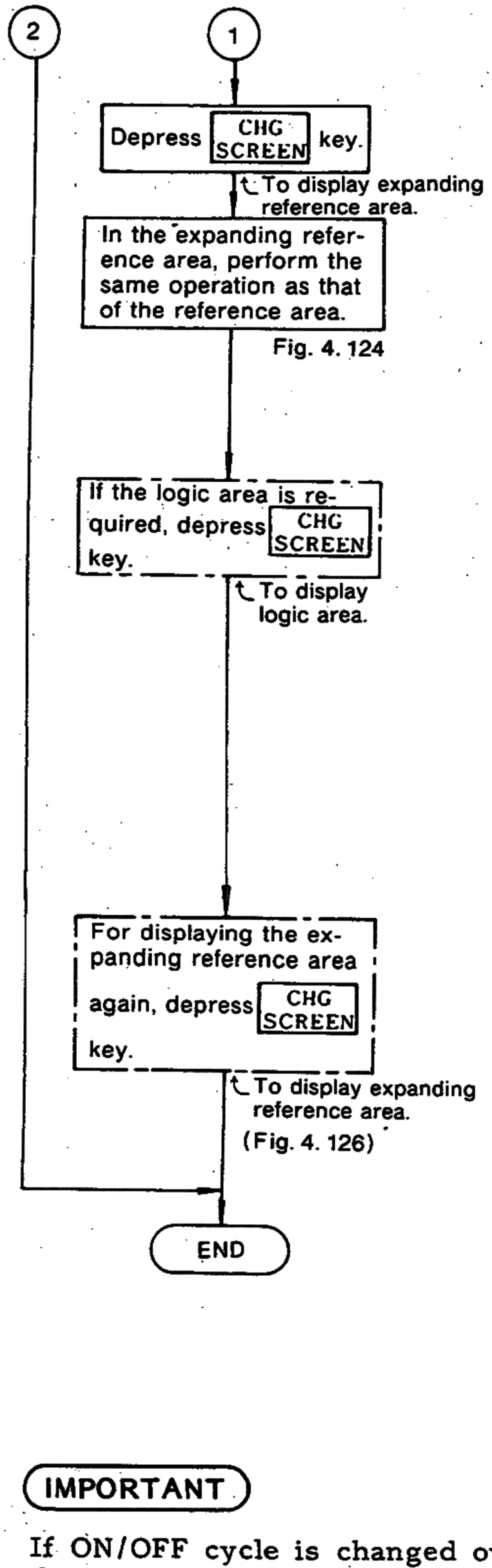


Fig. 4.124

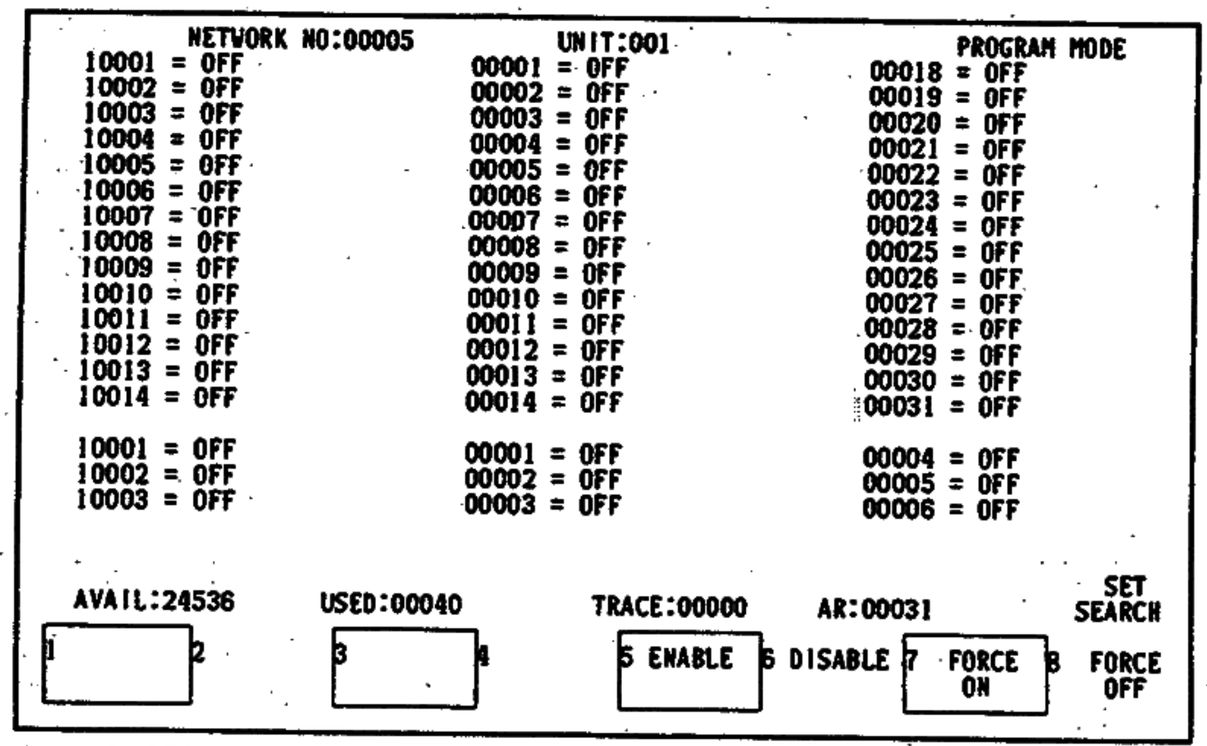


Fig. 4.124

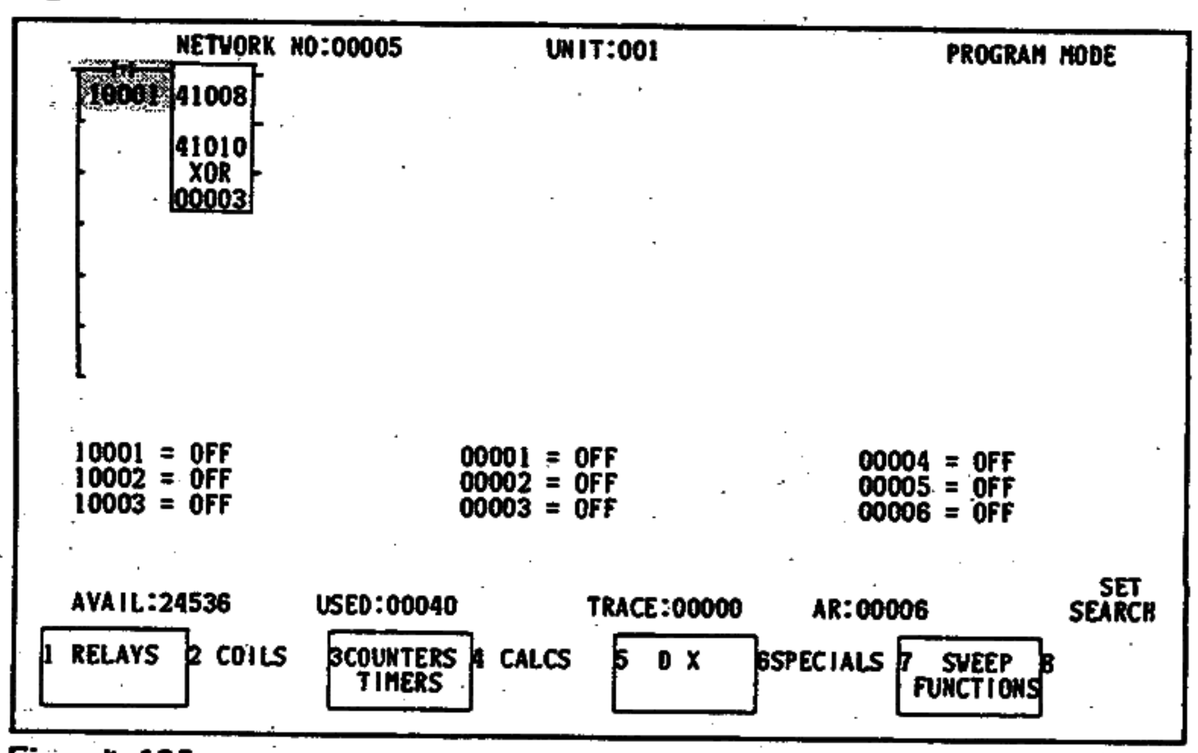


Fig. 4.125

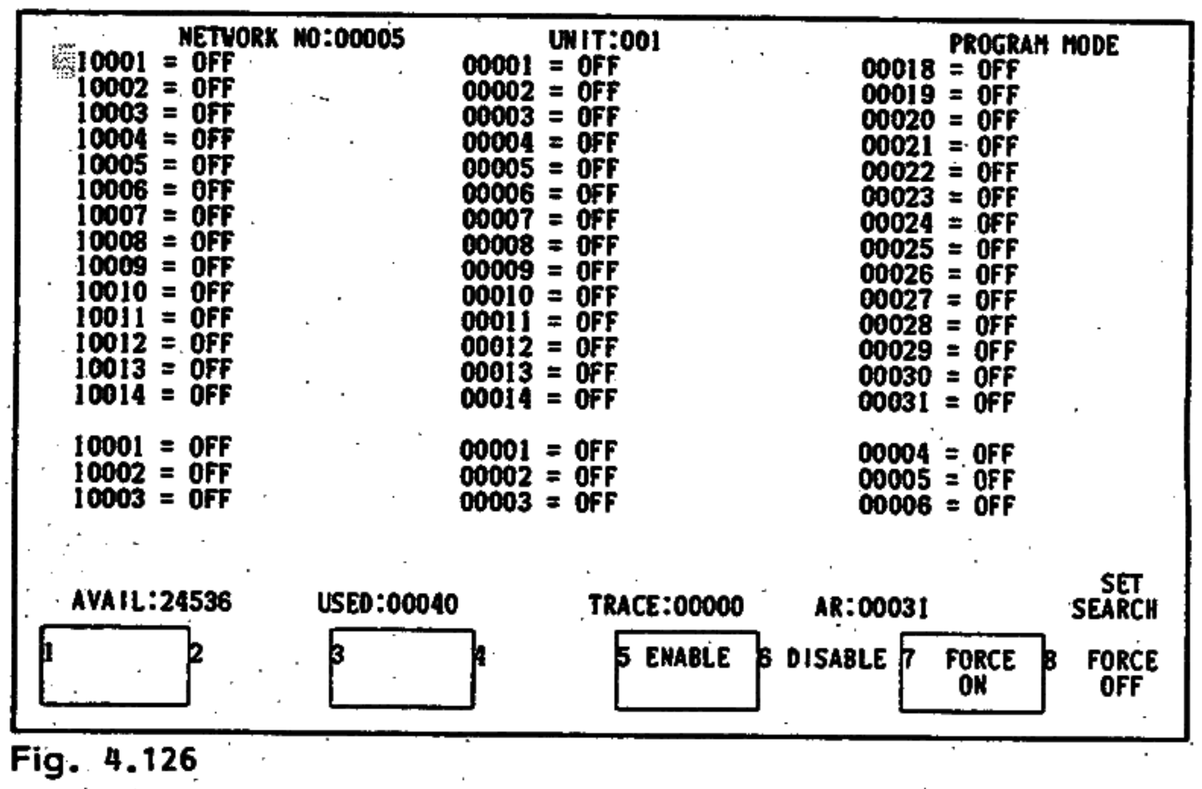


Fig. 4.126

IMPORTANT

If ON/OFF cycle is changed over at high speed, a correct content may not be displayed on P150 screen, but in RAP section of U84.

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. CHG SCREEN key allows the user to change the screen display from logic screen to alternate screen.
3. In monitor mode, (ENABLE), (DISABLE), (FORCE ON) and (FORCE OFF) in the label area are not displayed.

(1) STATUS DISPLAY OF COIL, INPUT RELAY ②

This is a function for displaying status of coils and input relays in order of the reference number. The function is used to display the next reference number or the previous reference number of the currently displayed reference number.

- For the next reference number display: [PREV GET NEXT] key
- For the previous reference number display: [SHIFT] and [PREV GET NEXT] keys

POINT

- The cursor should be placed in the reference area or the expanding reference area.

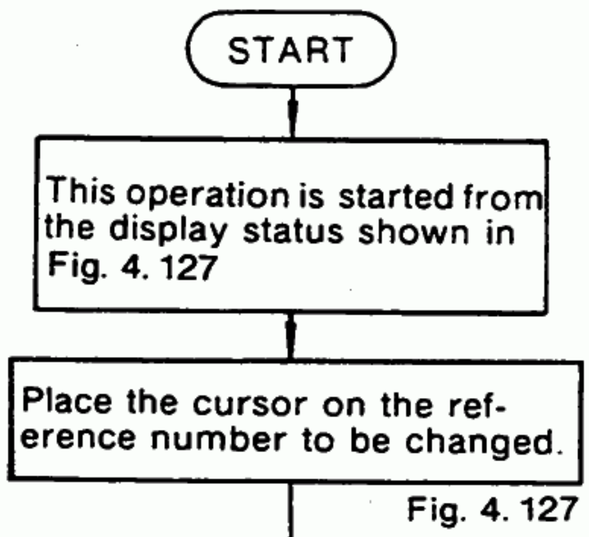


Fig. 4. 127

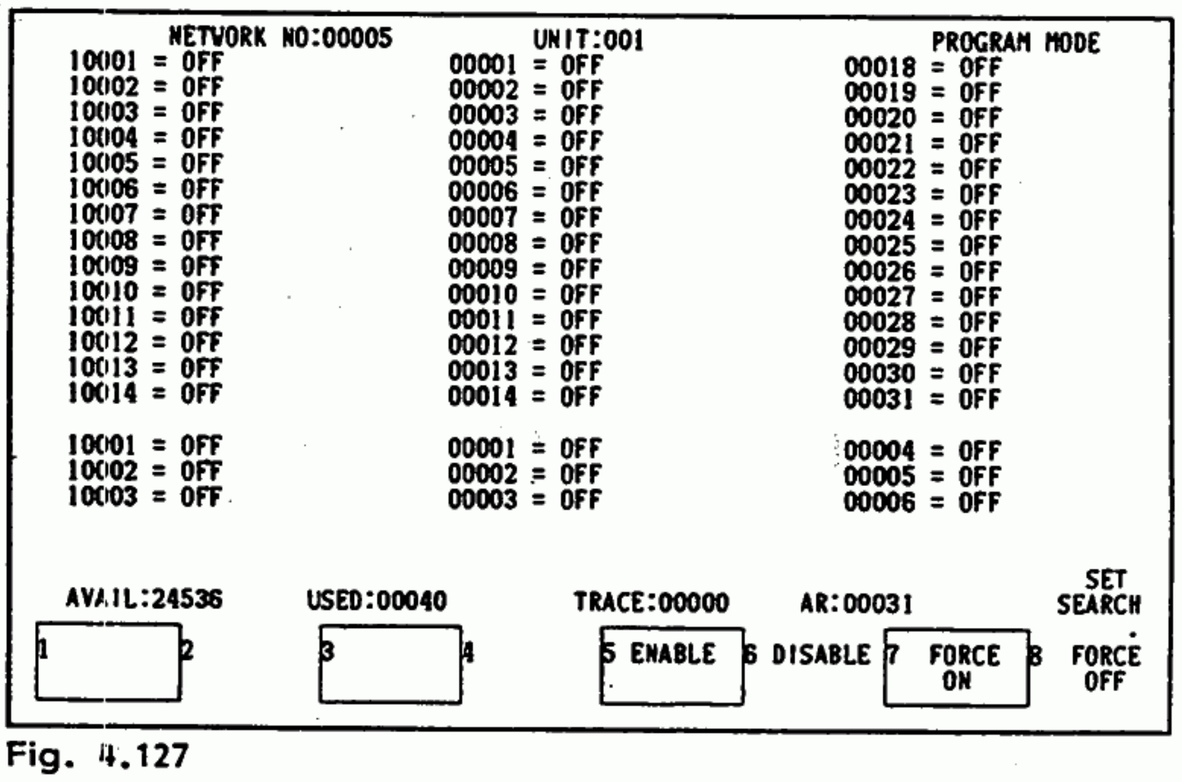


Fig. 4.127

Depress [PREV GET NEXT] key.

- Reference number "00004" on the cursor becomes "00005."
- Only the reference number in the column is moved up to the next higher place by one, but those below the cursor are not moved. (Fig. 4. 128)

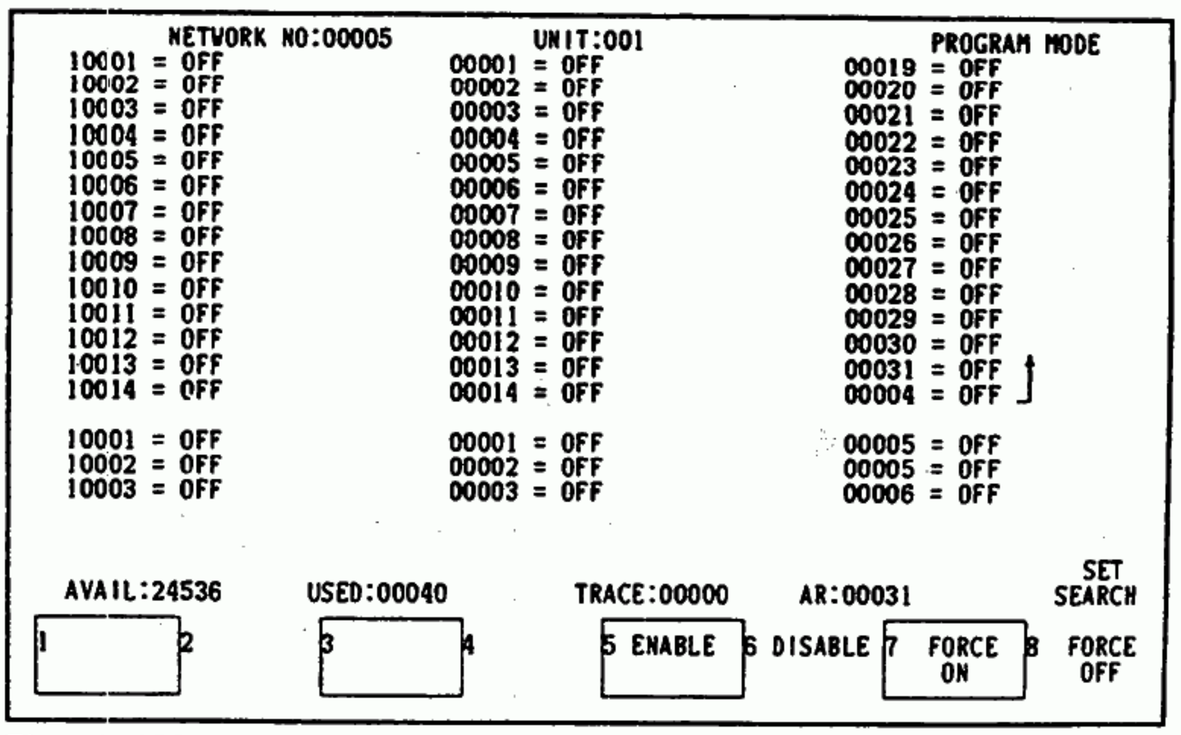
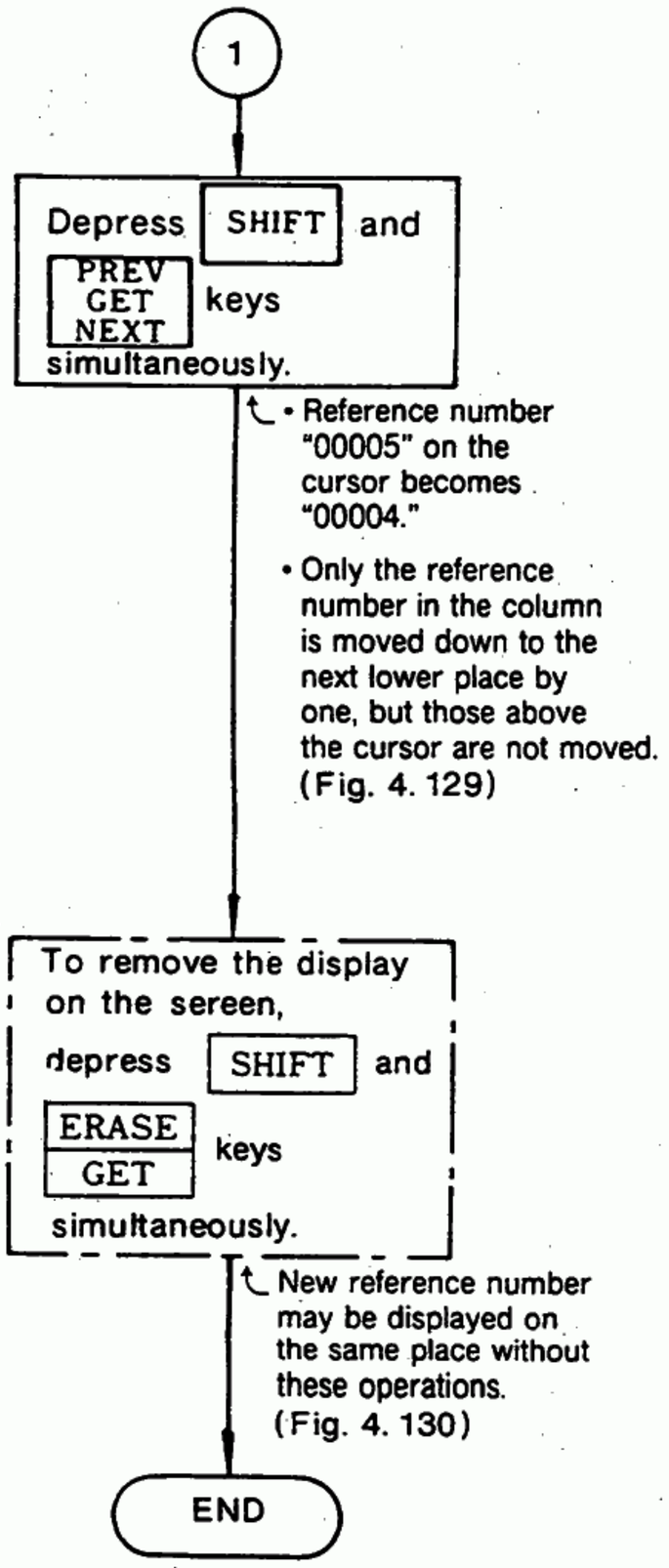


Fig. 4.128



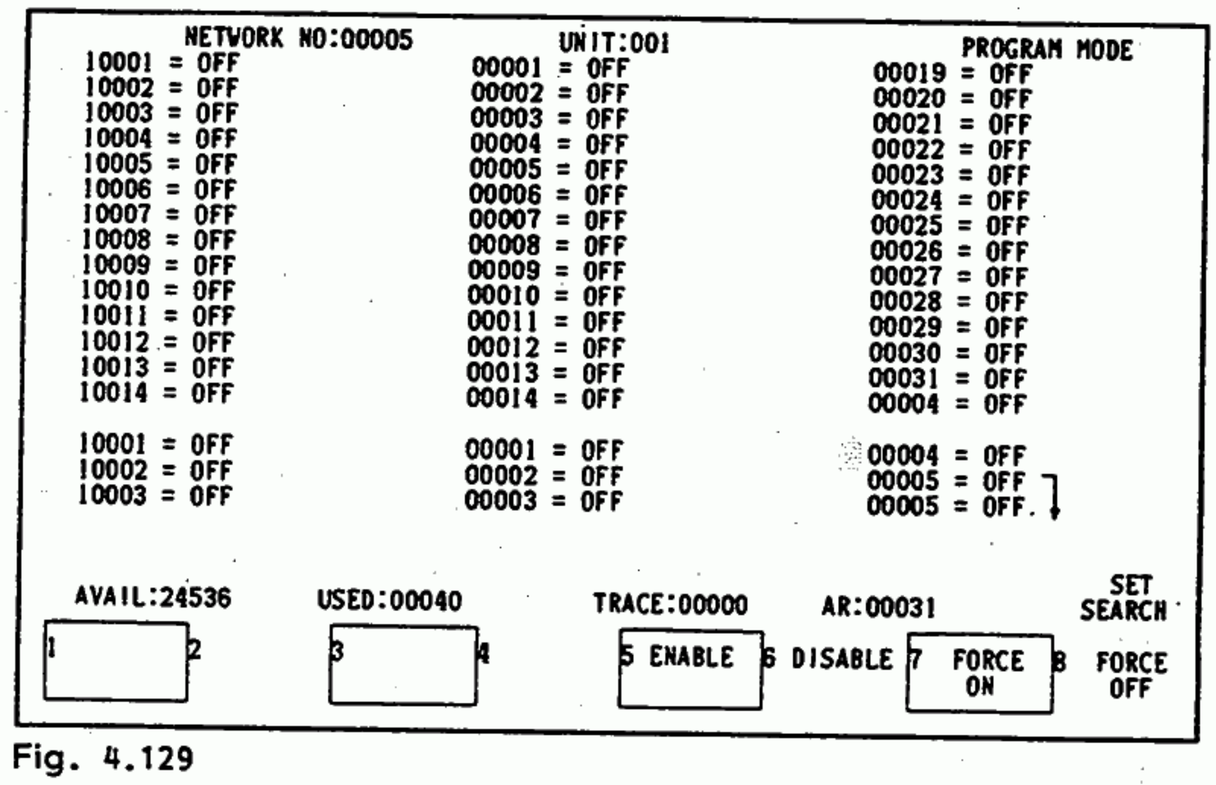


Fig. 4.129

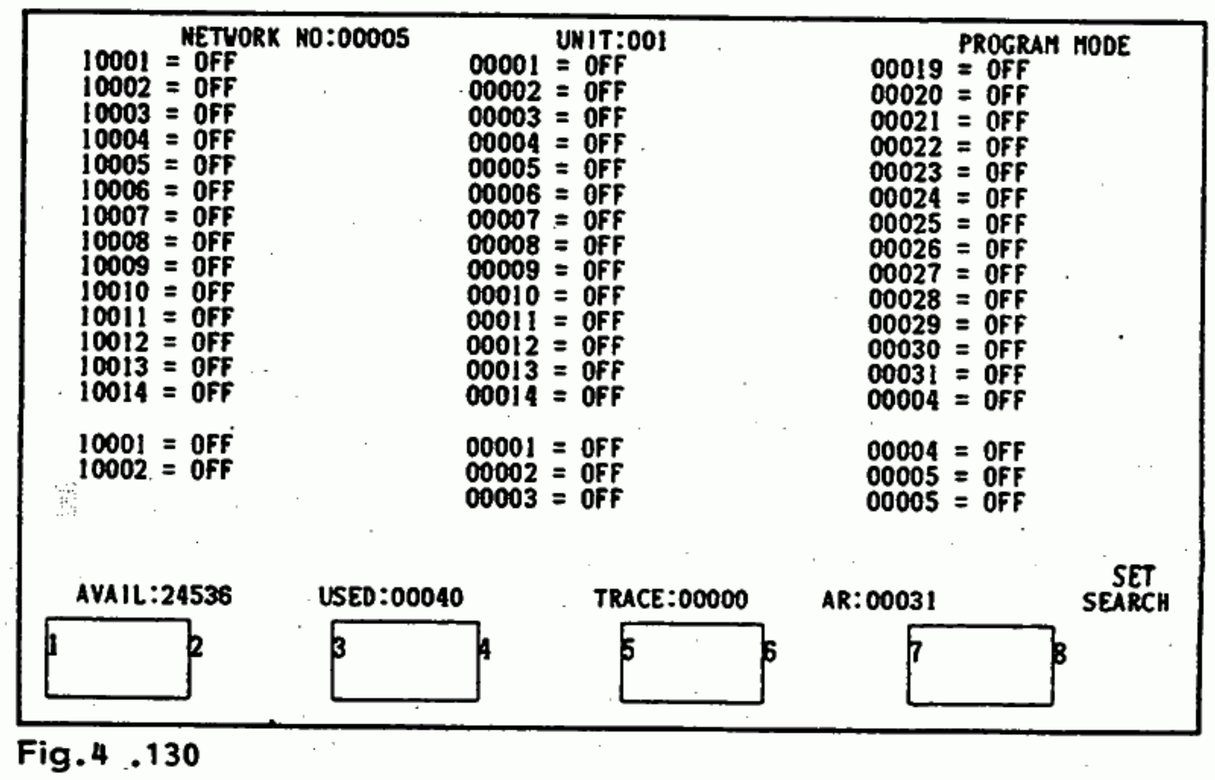


Fig.4 .130

IMPORTANT

If ON/OFF cycle is changed over at high speed, a correct content may not be displayed on P150 screen, but in RAP section of U84.

NOTE

1. Effective PREV GET NEXT Key Operation

   How to dispaly the status of sequential coils 1 to 17 using the expanding reference area.

   . Display coil "1" on the lowest line in the reference area, then depress PREV GET NEXT key 16 times.

   . Display coil "17" on the highest line in the expanding reference area, then depress PREV GET NEXT key 16 times, with SHIFT key depressed.

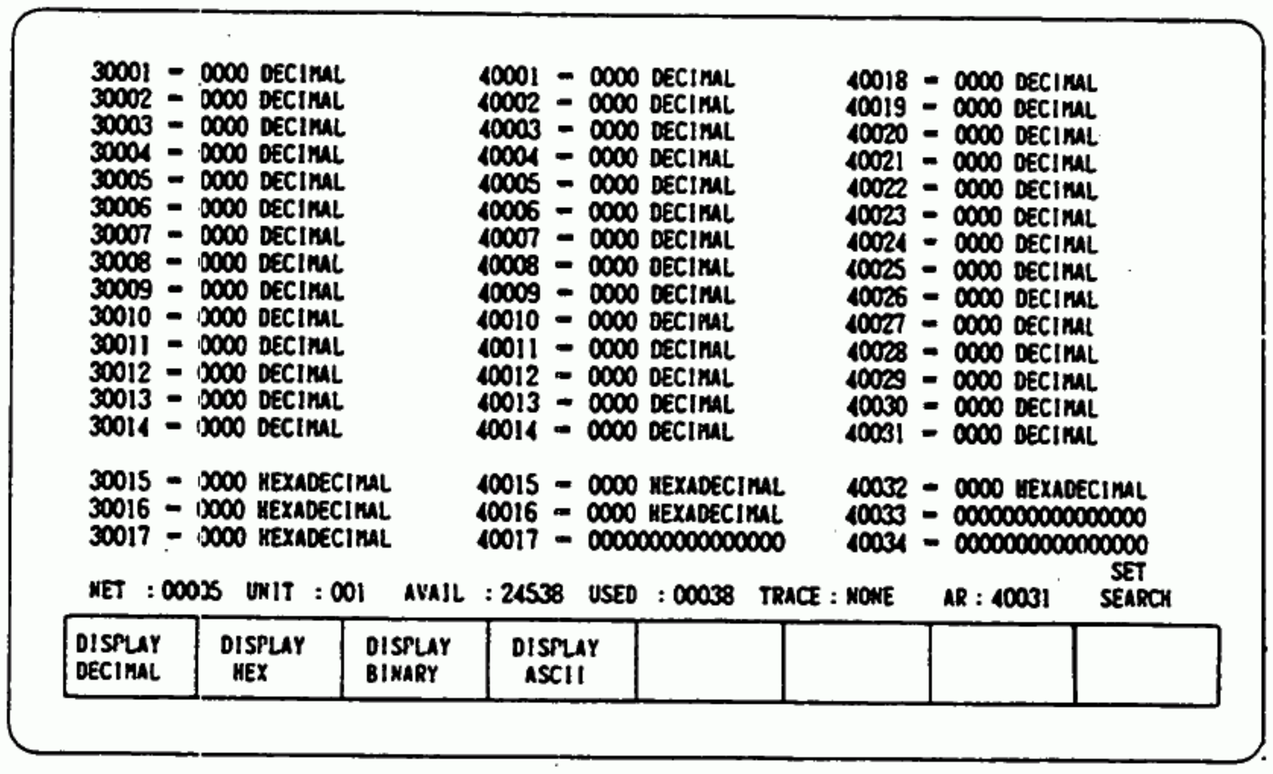
2. In monitor mode, ENABLE, DISABLE, FORCE ON and FORCE OFF in the label area are not displayed.

(2) REGISTER CONTENTS DISPLAY ①

Display for Contents of Input Register and Holding Register

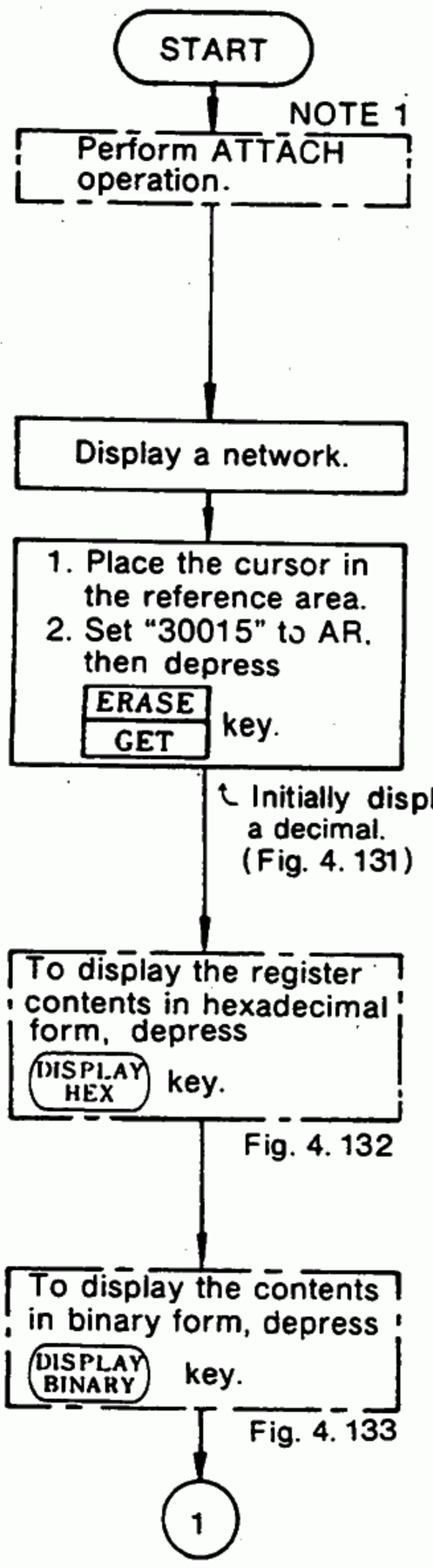
Register contents can be displayed by any one of the following data types:

- Decimal
- Hexadecimal
- Binary
- ASCII



POINT

- The cursor should be placed in the reference area or the expanding reference area.



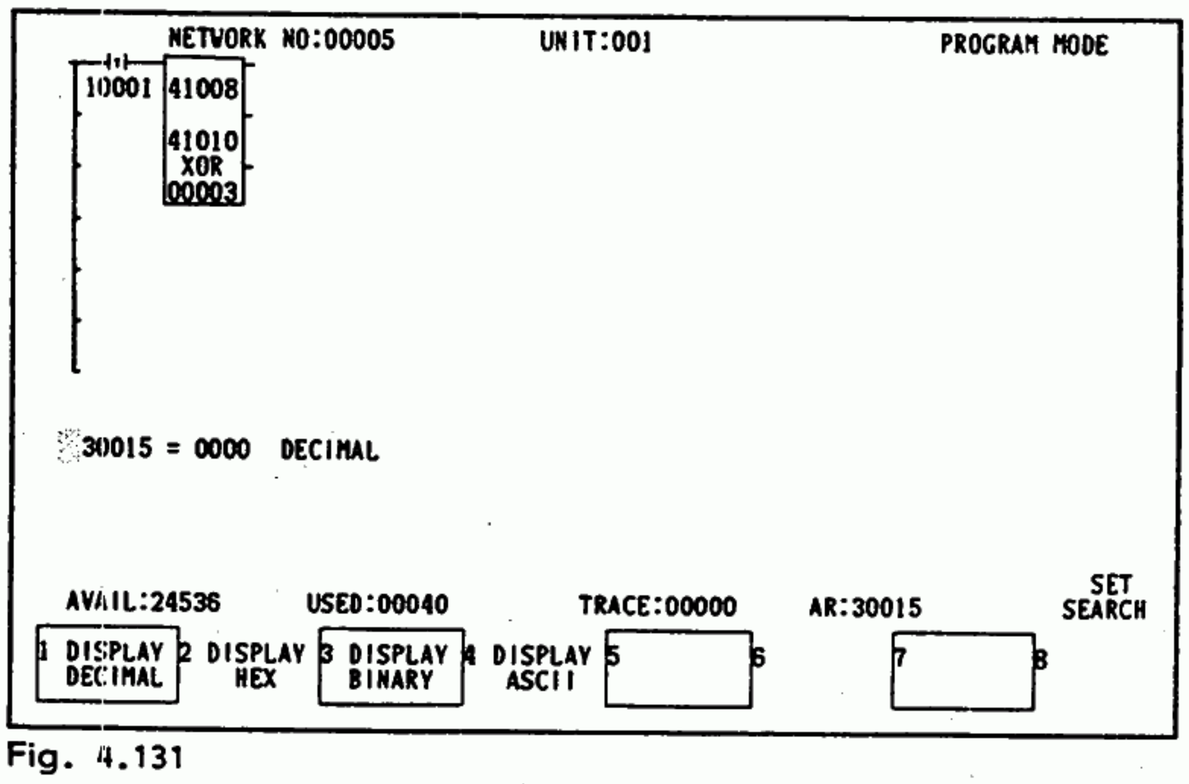


Fig. 4.131

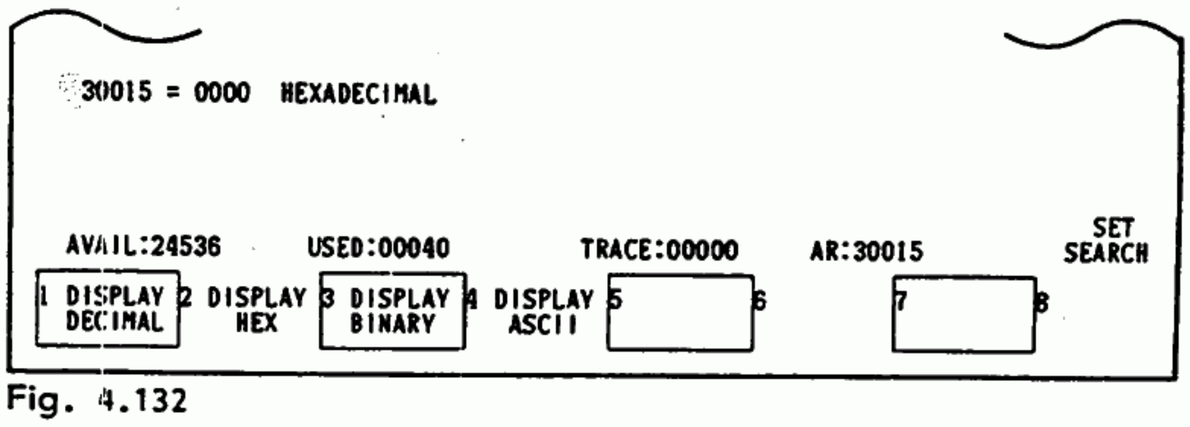


Fig. 4.132

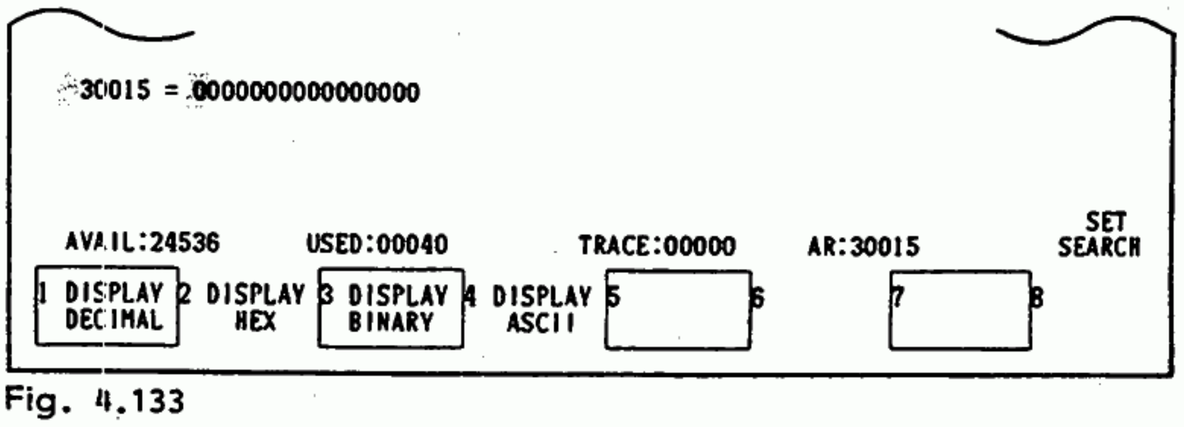
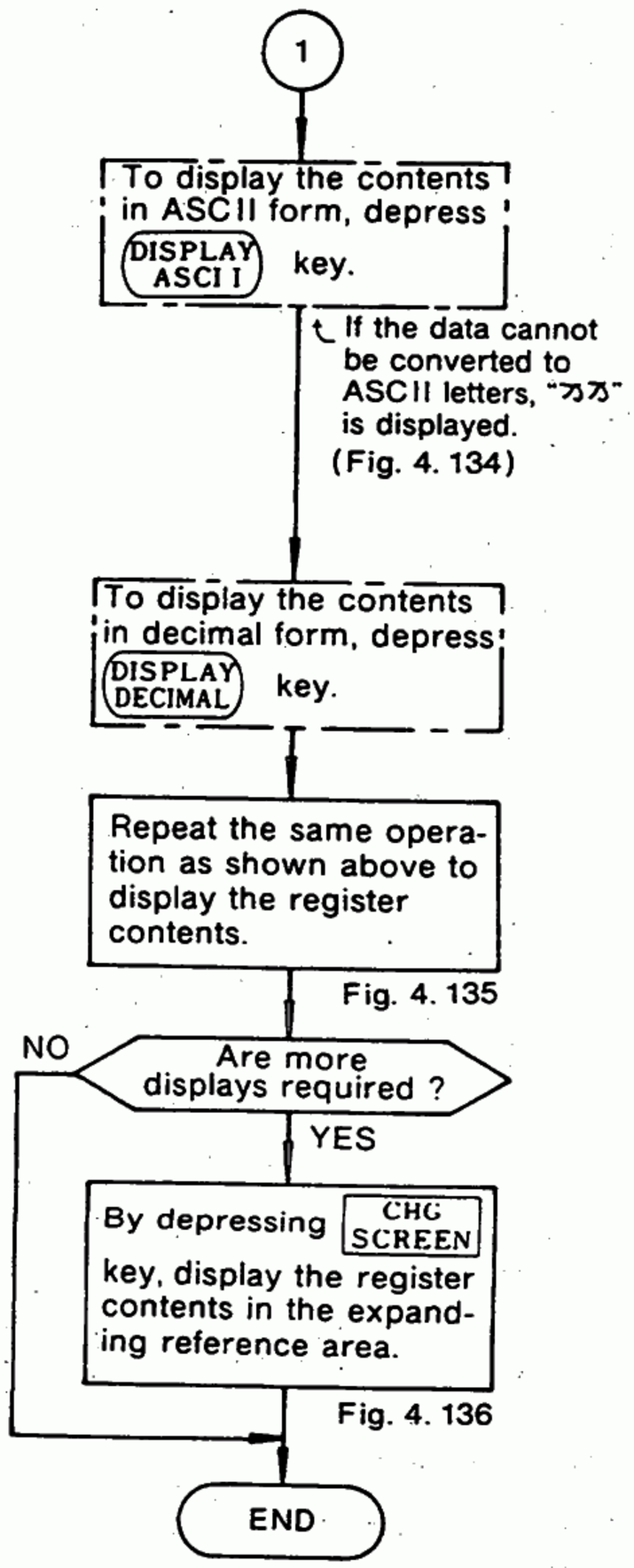


Fig. 4.133



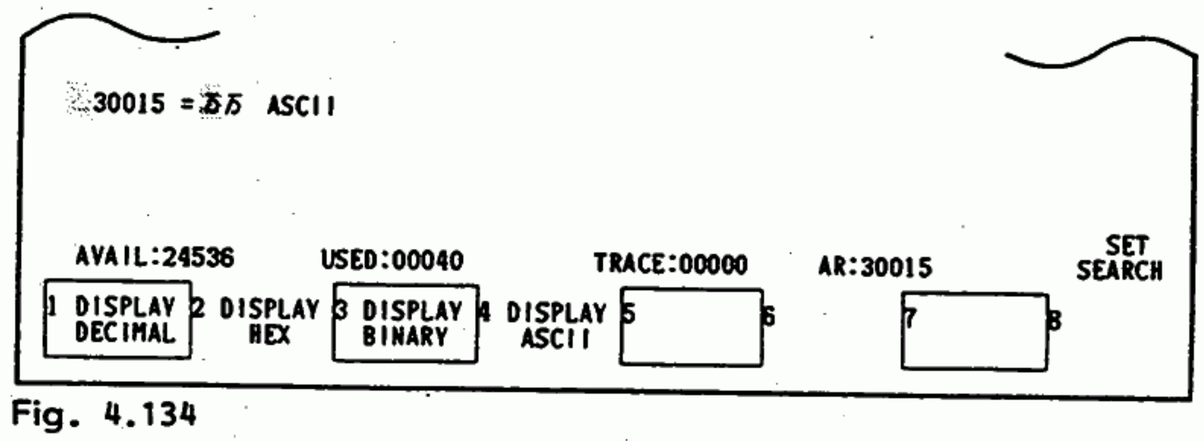


Fig. 4.134

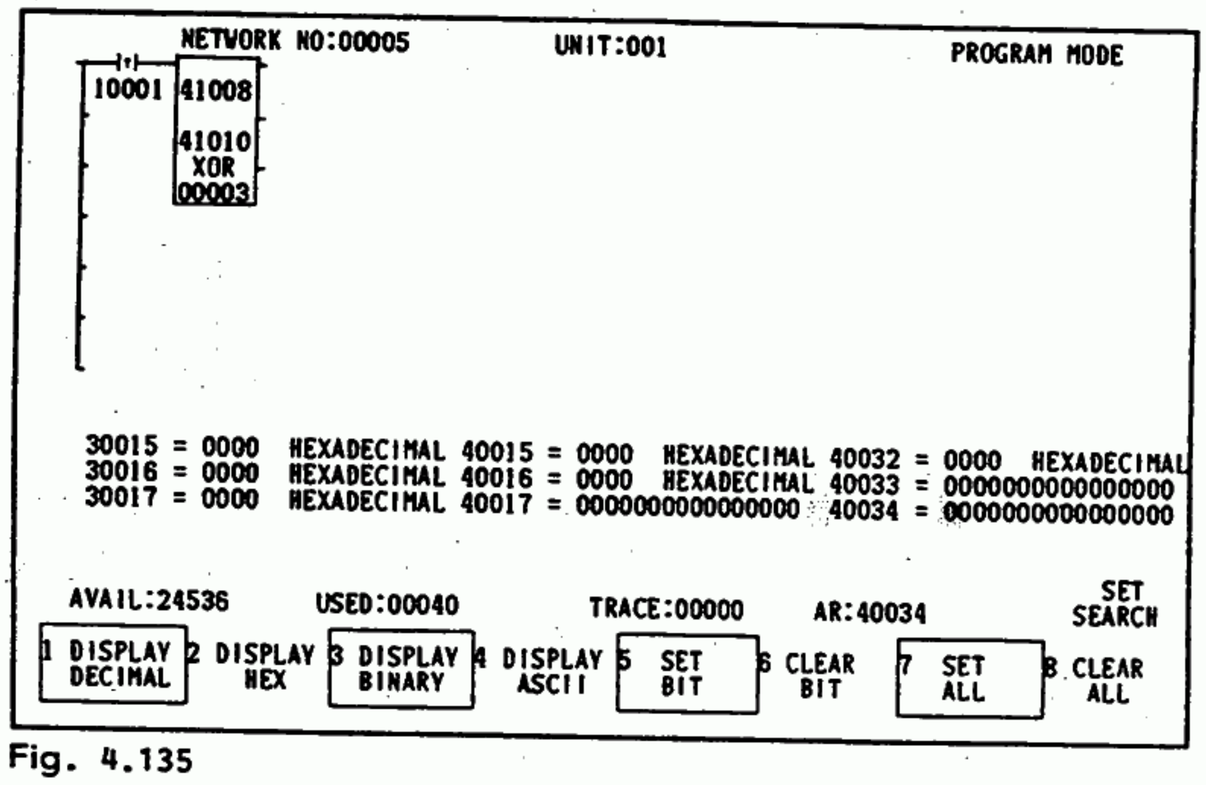


Fig. 4.135

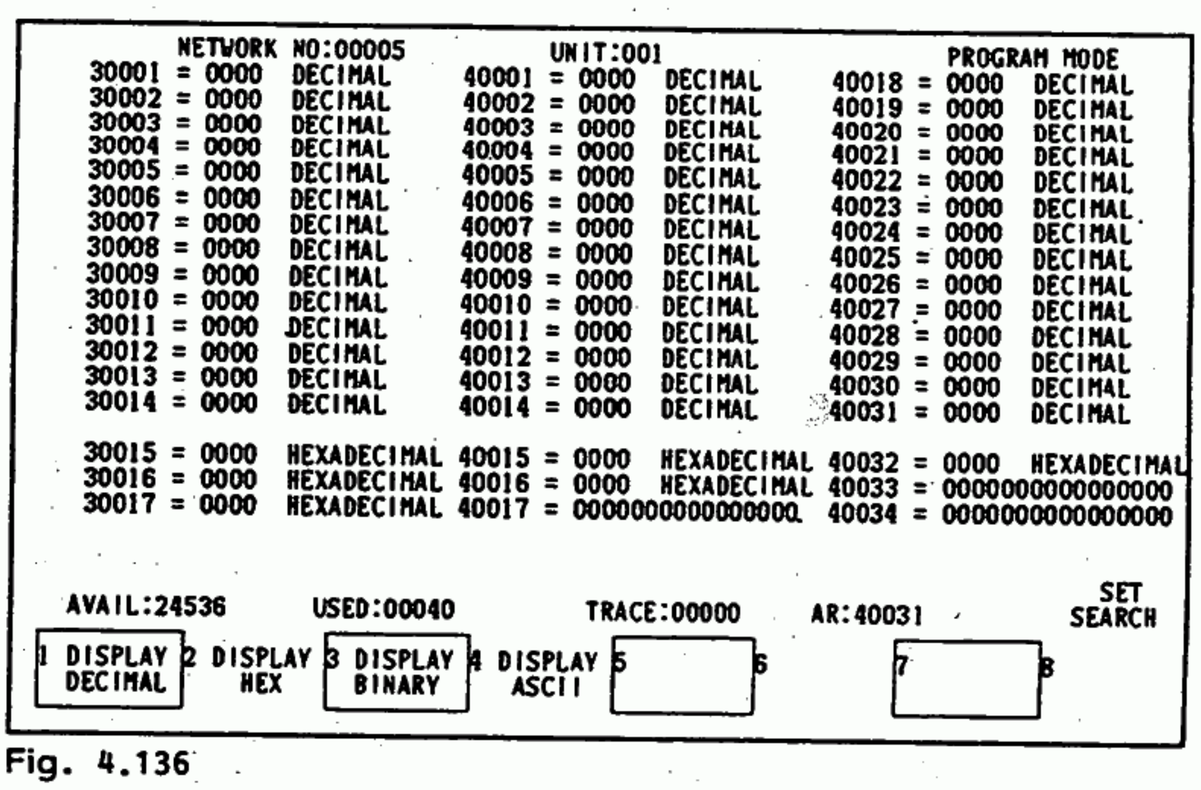


Fig. 4.136

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.

2. CHG SCREEN key allows the user to change the screen display from logic screen to alternate screen.

3. In program mode, when the contents in a holding register are dispalyed in binary only, the following symbols are displayed:
   SET BIT, CLEAR BIT, SET ALL, CLEAR ALL, and a small cursor

   40034 = 0000000000000000
   ↑Actual Cursor ↑Small Cursor

4. If the register contents are 9999 or more in decimal form, the following type of display appears.

   Example, 40100 = > 9999 OVERFLOW

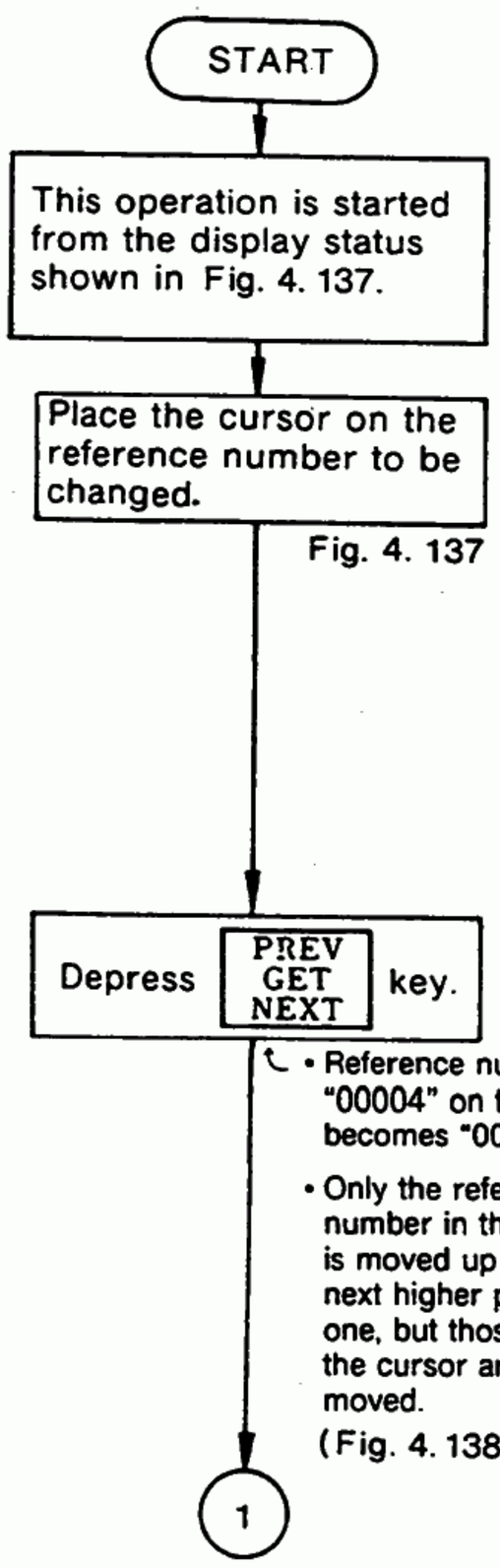
(2) REGISTER CONTENTS DISPLAY ②

This is a function for displaying contents of registers in order of the reference number. The function is used to display the next reference number or the previous reference number of the currently displayed reference number.

- For the next reference number display: [PREV GET NEXT] key
- For the previous reference number display: [SHIFT] and [PREV GET NEXT] keys

POINT

- The cursor should be placed in the reference area or the expanding reference area.
- For new display form (next or previous reference number), the display form on the cursor is used.



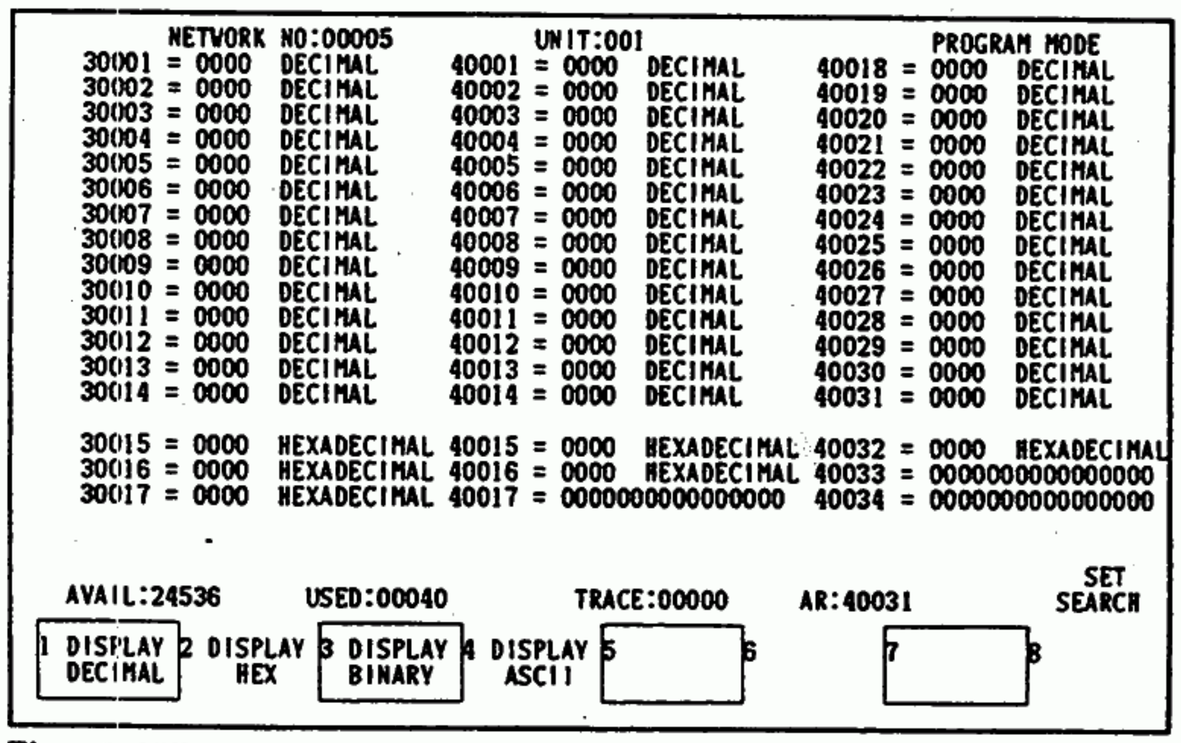


Fig. 4.137

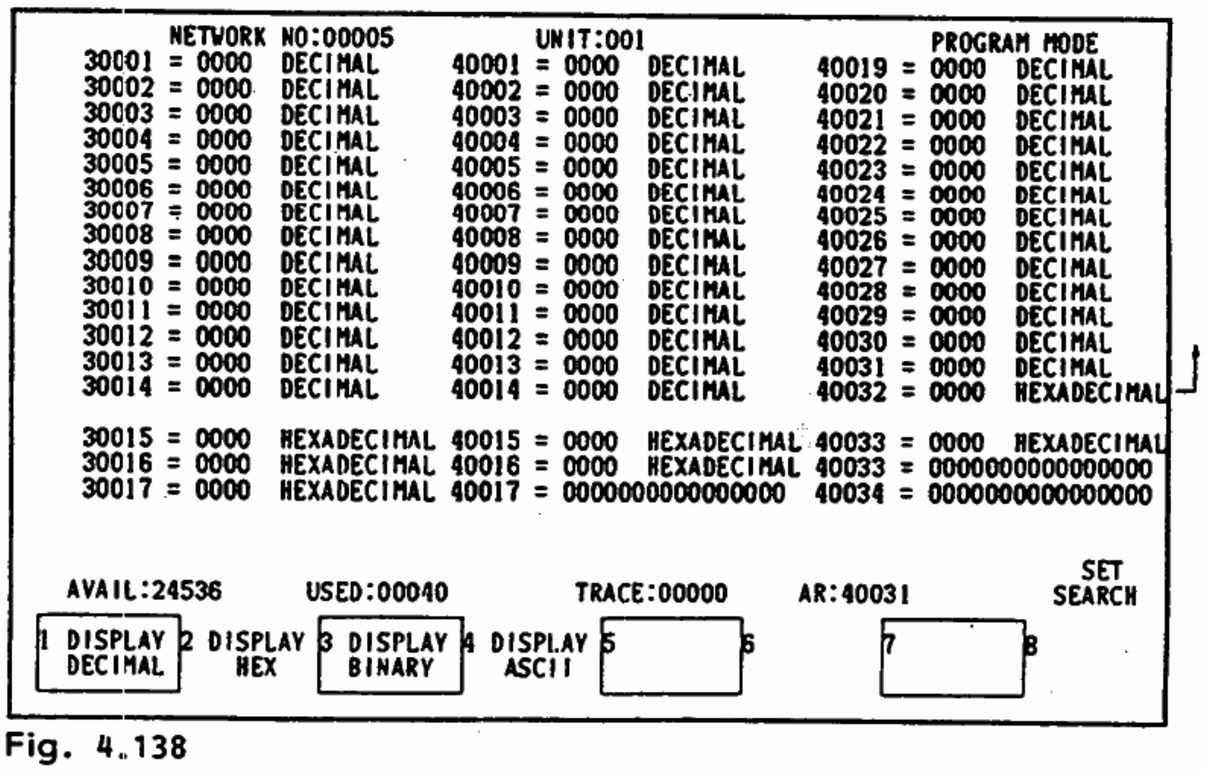
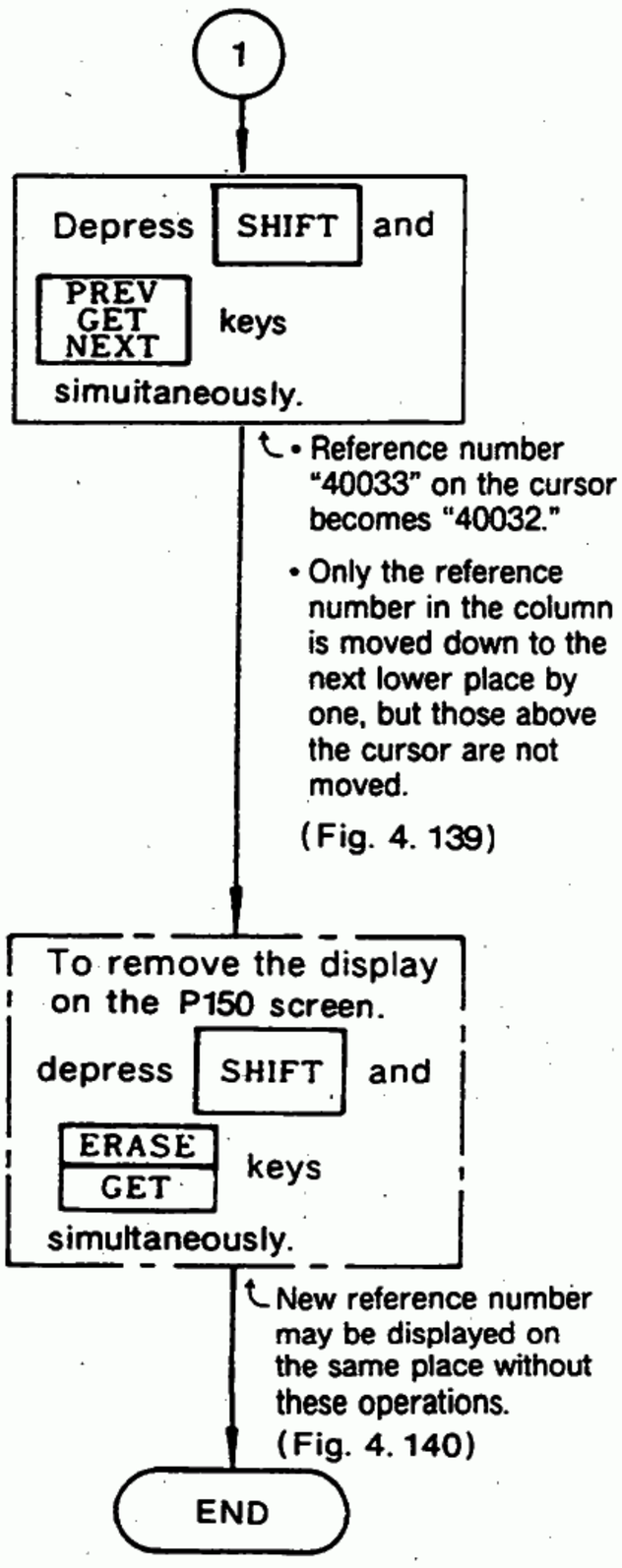


Fig. 4.138



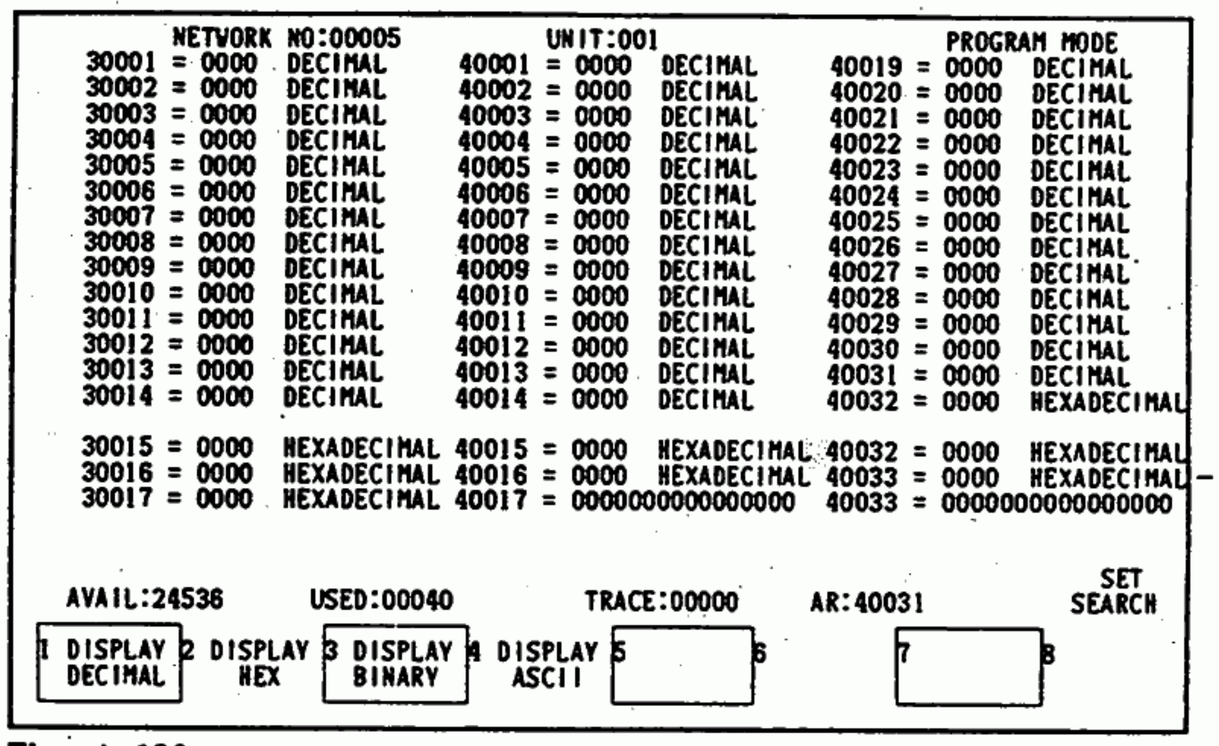


Fig. 4.139

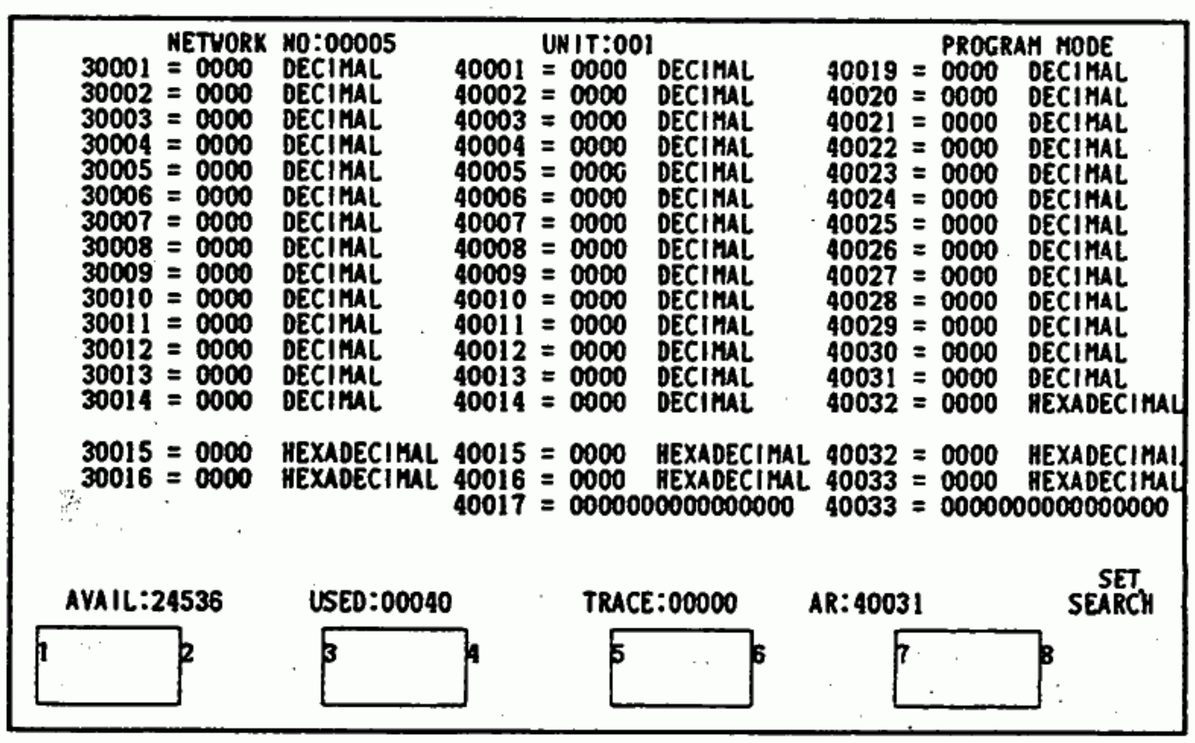


Fig. 4.140

NOTE

Effective PREV GET NEXT Key Operation

How to display the status of sequential coils 40001 to 40017 using the expanding reference area.

. Display register "40001" on the lowest line in the reference area, then

depress PREV GET NEXT key 16 times.

. Display register "40017" on the highest line in the expanding reference area, then depress PREV GET NEXT key 16 times, with SHIFT key depressed.

(3) DATA STORING IN HOLDING REGISTER

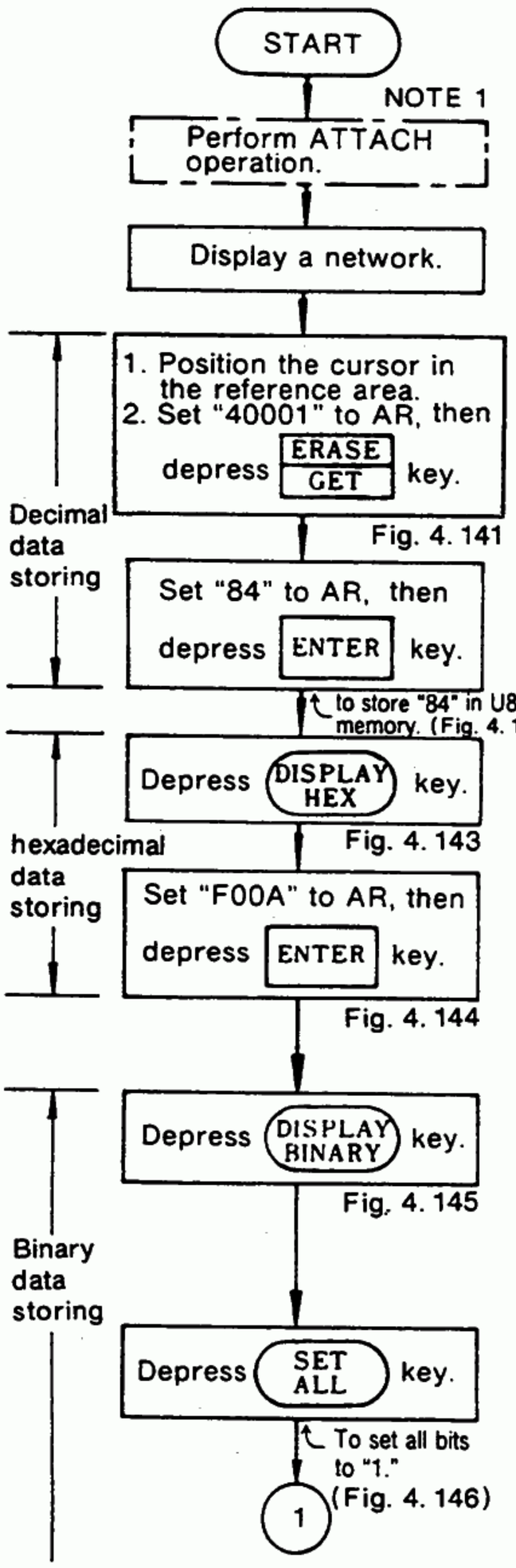
This function is used to store any numerical value (pattern) in any holding register, and it is displayed in the reference area or the expanding reference area.

Data Types and Range:

- Decimal ··· 0000 to 9999
- Hexadecimal ··· 0000 to FFFF
- Binary ··· Any 16-bit pattern
- ASCII ··· Any 2 ASCII characters

POINT

- The cursor should be placed in the reference area.
- The P150 cannot store the numerical value in the input register.



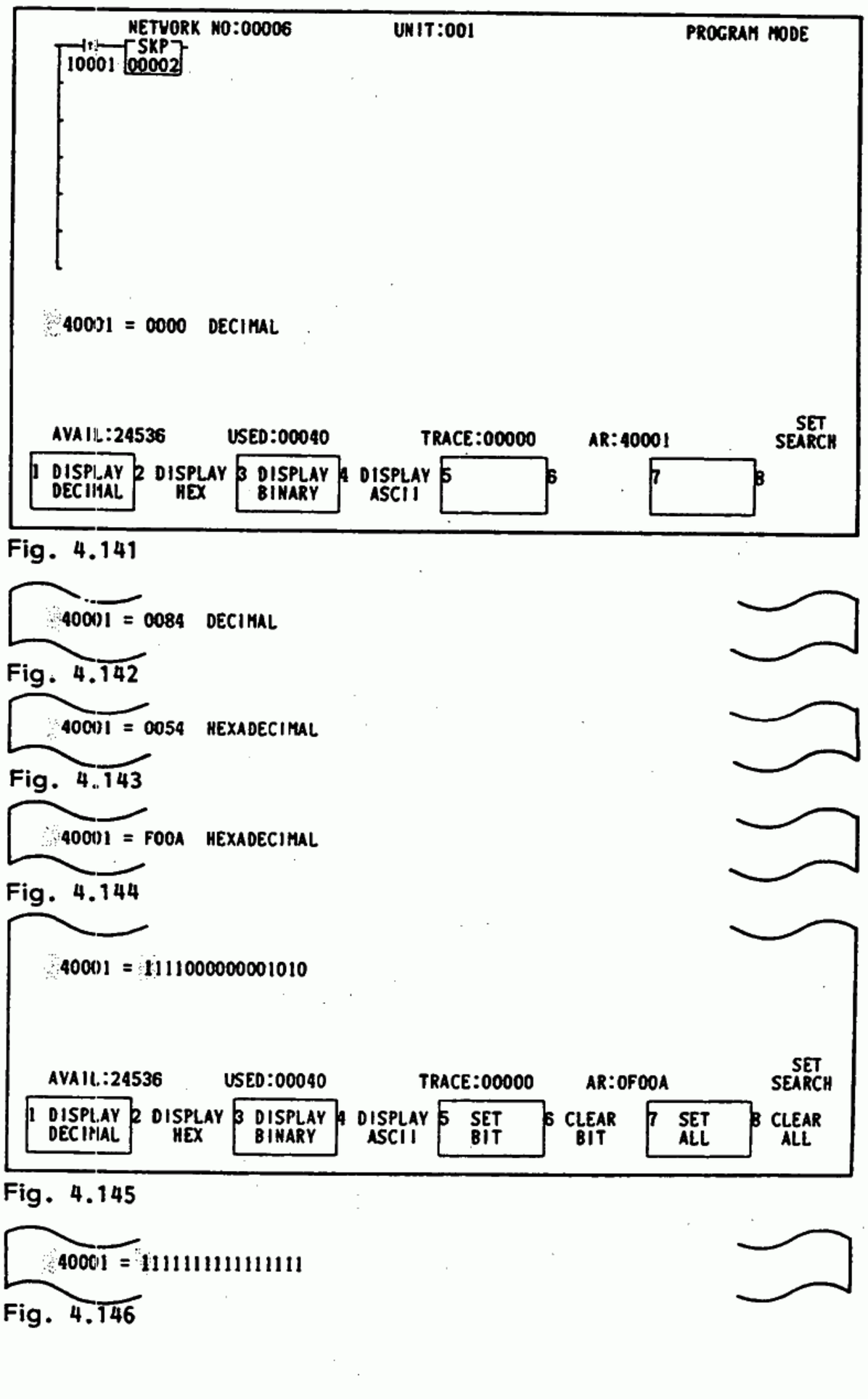


Fig. 4.141

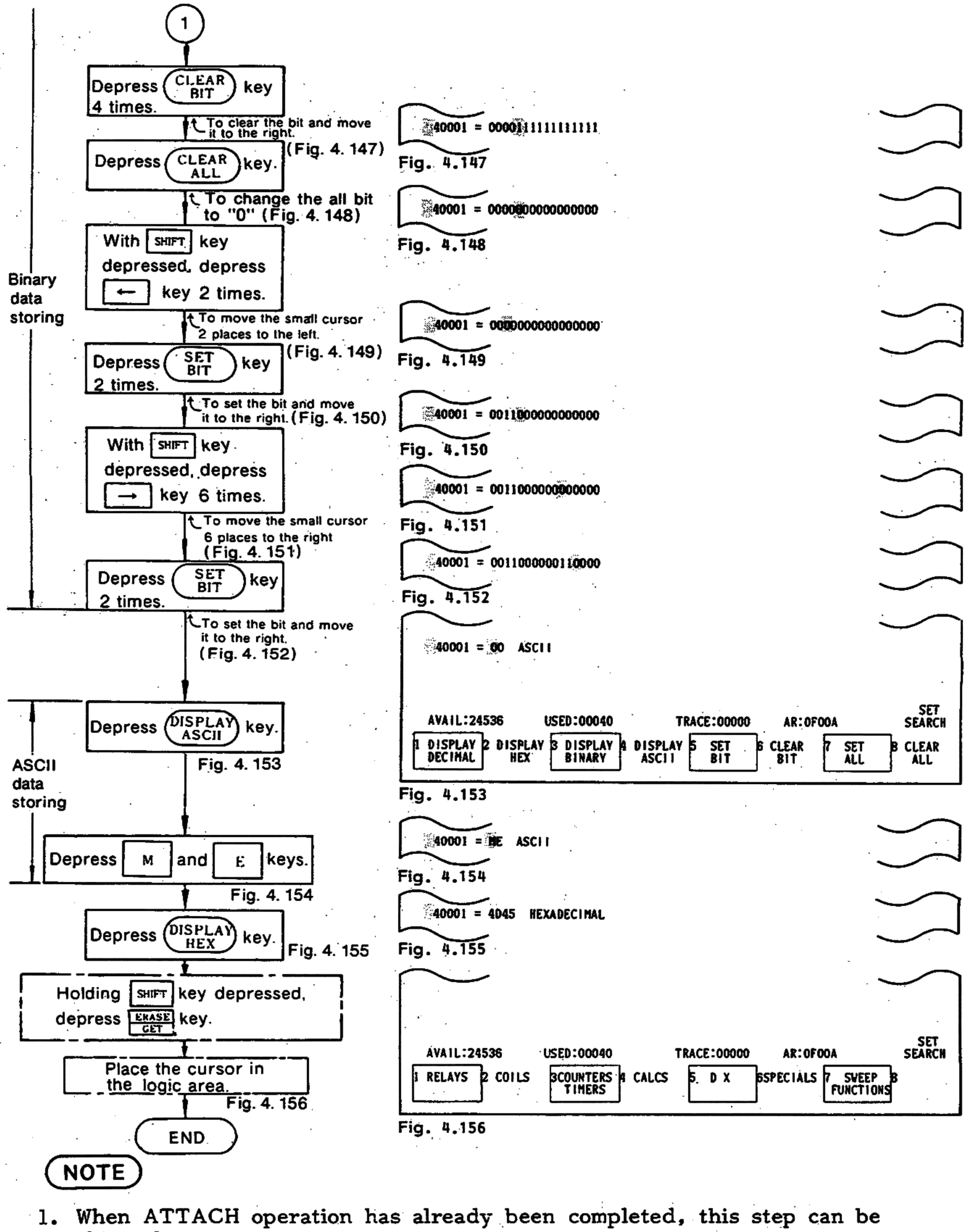
Fig. 4.142

Fig. 4.143

Fig. 4.144

Fig. 4.145

Fig. 4.146



1. When ATTACH operation has already been completed, this step can be skipped.

2. Where the register contents are more than 9999 in decimal, the following type of display appears.

   Example, 40100 =>9999 OVERFLOW

3. Because there is no ASCII code corresponding to the register contents, the register contents cannot be converted to ASCII code in ASCII display. Therefore, the following type of display can be found.

   Example, 40100 = ?? ASCII

4.6.5 SIMULATION

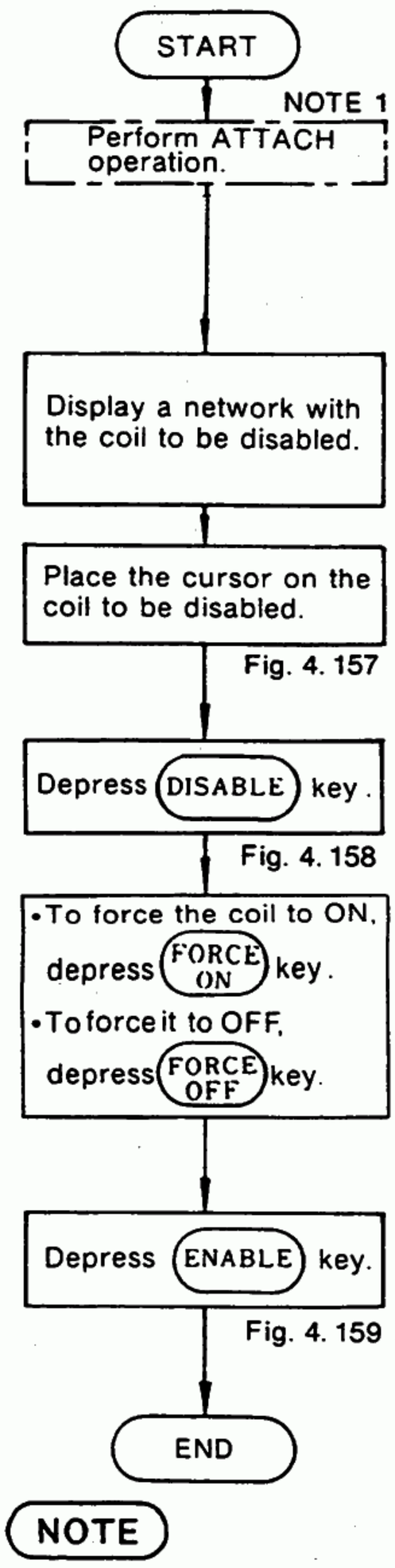
(1) COIL DISABLE

PROGRAM MODE

The Disable function is used to simulate a network operation, and simplify the checkout and maintenance of a control system using the U84 Controller. As an example, disable operation for a logic coil in the logic area is shown below.

POINT

- The cursor should be placed in the logic area.
- This function is effective only on the coil with -( )- or -(L)- in the logic area.



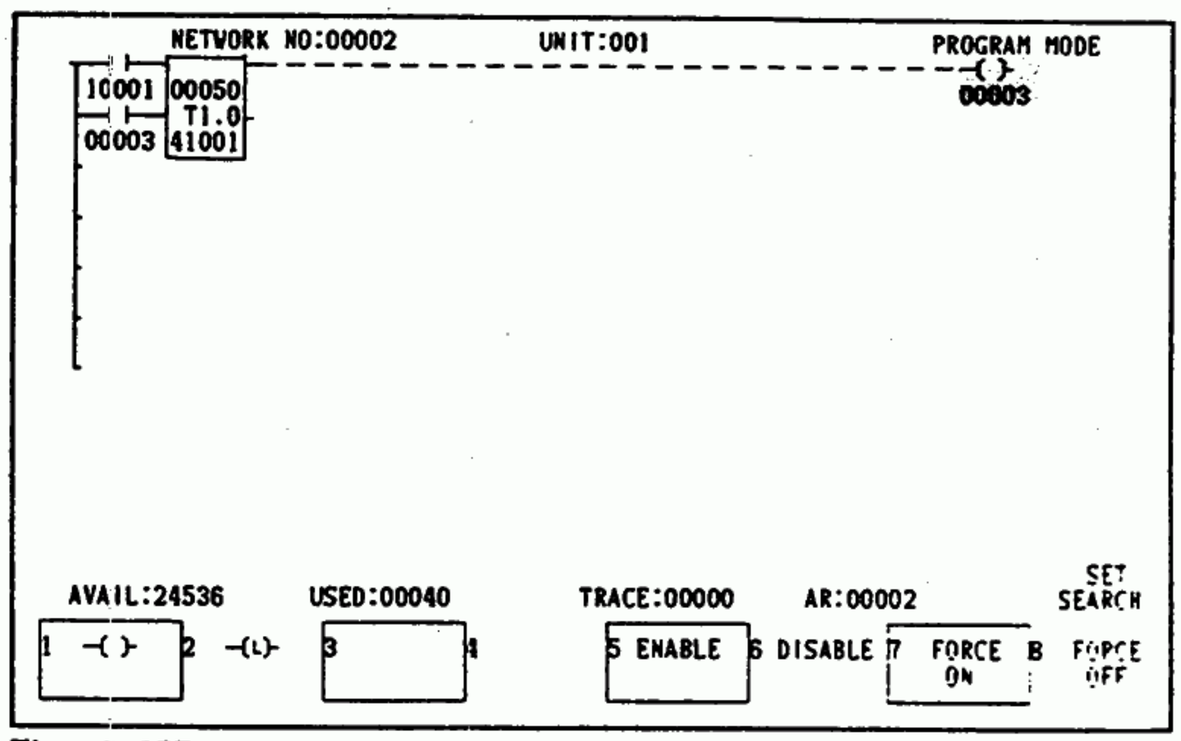


Fig. 4.157

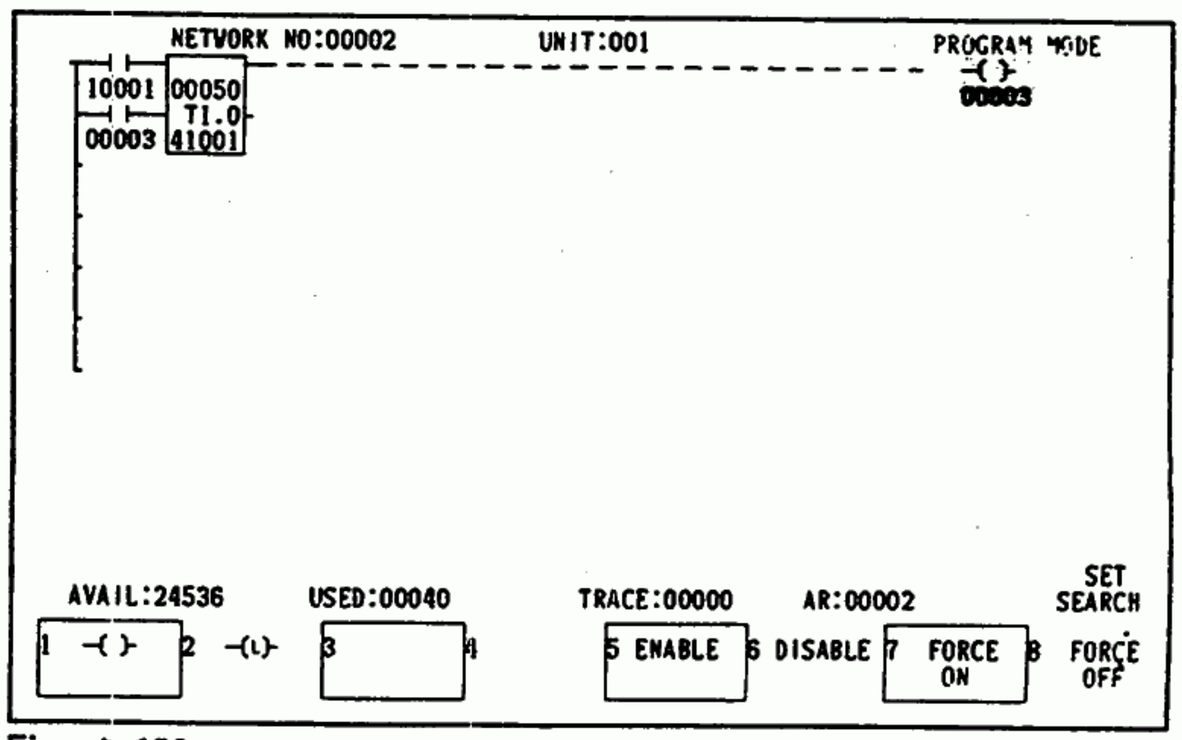


Fig. 4.158

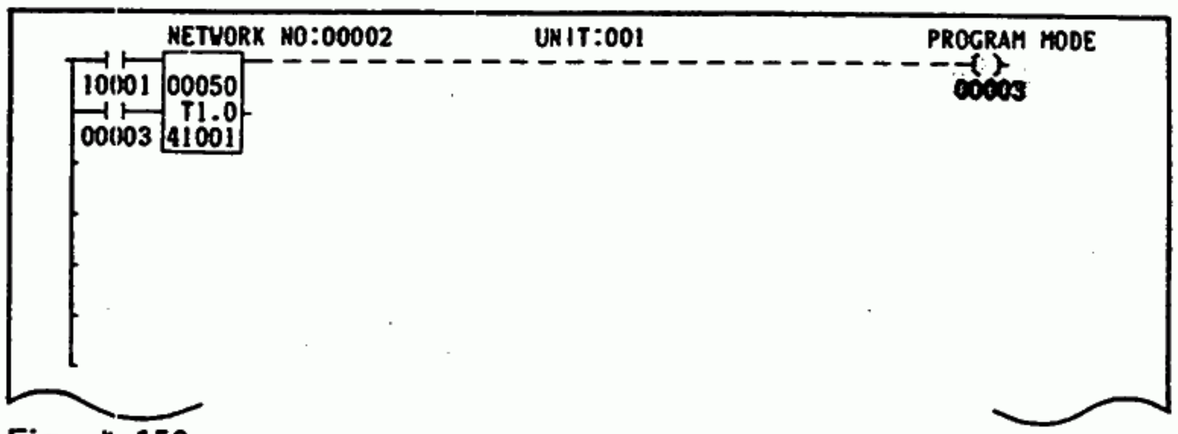


Fig. 4.159

1. When ATTACH operation has already been completed, this step can be skipped.
2. Unnecessary disabled coils should be enabled.

(2) COIL, INPUT RELAY DISABLE

This Disable operation is carried out in the reference area.

POINT

- The cursor should be placed in the reference area or the expanding reference area.
- Where input relays are used for a destination of data transfer function, they must be disabled either ON or OFF.
- Where logic coils are used for the destination of the data transfer function, the disable operation should be performed so as not to activate the data transfer function.

(Generally, a result of data transfer takes precedence over all others. However, when the logic coils and the input relays are disabled or the disabled ones are cycled ON-OFF-ON-OFF, a disabled status takes precedence over the data transfer.)

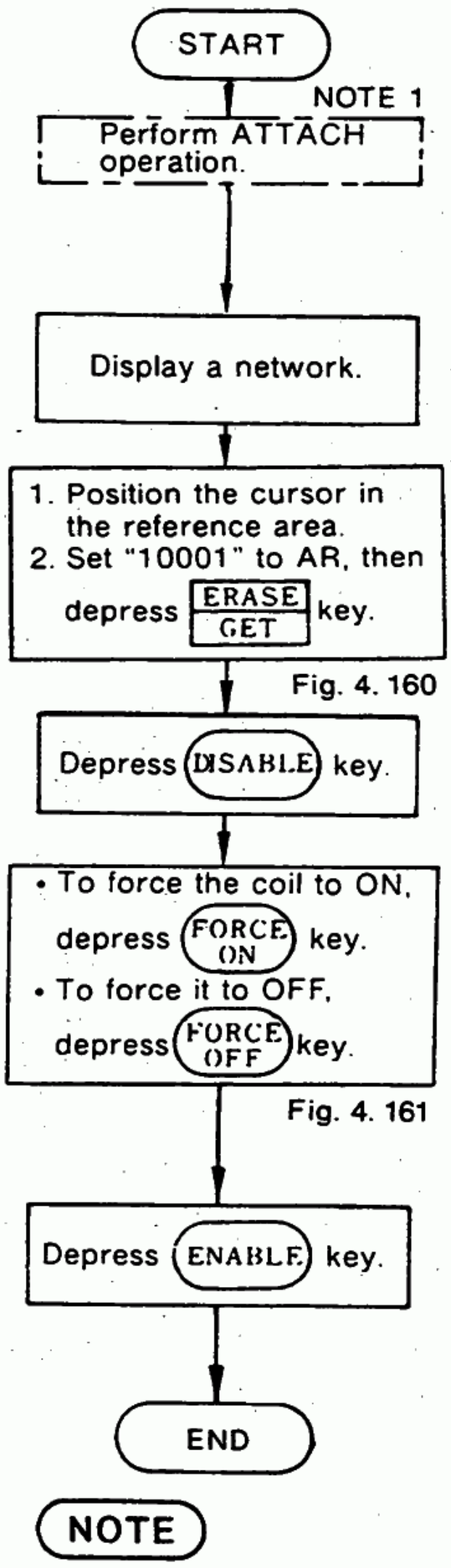


Fig. 4. 161

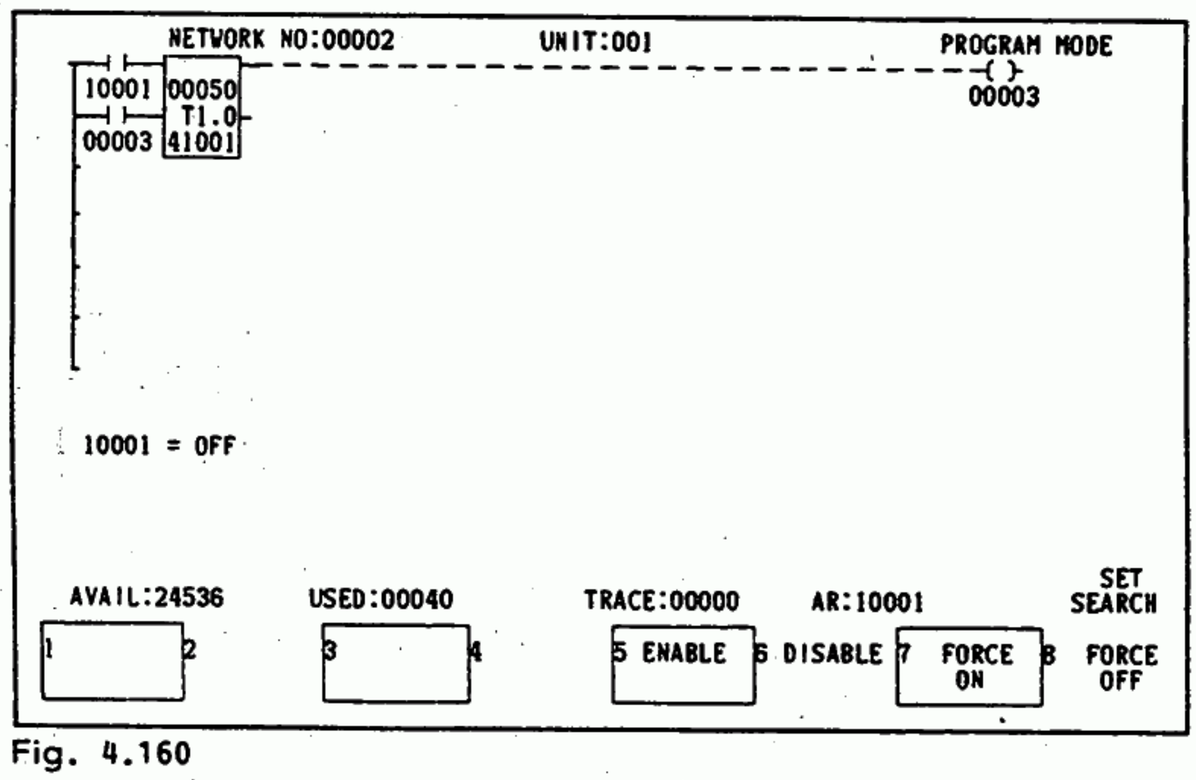


Fig. 4.160

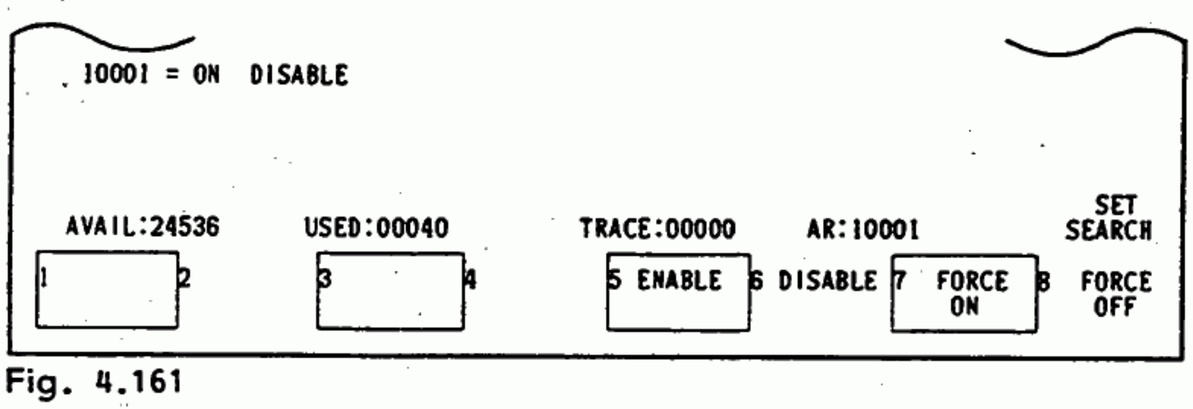


Fig. 4.161

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Unnecessary disabled coils and input relays should be enabled.

4.6.6 NETWORK CHECKING

PROGRAM MODE, MONITOR MODE

(1) SEARCH ①

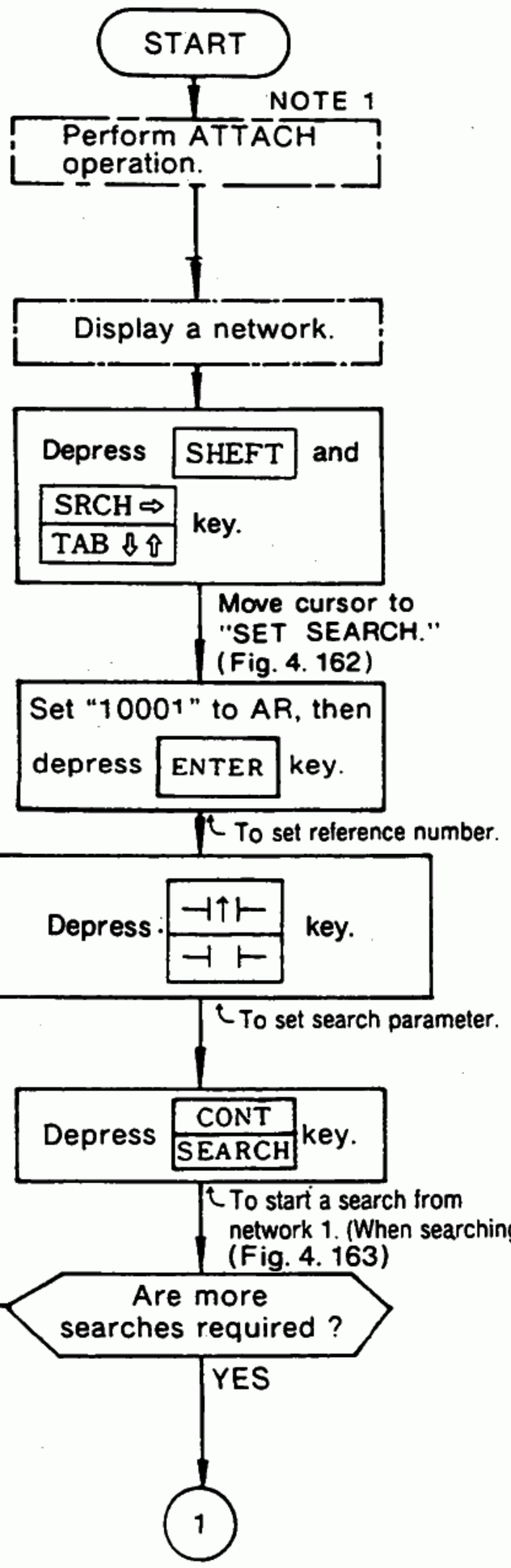
The logic in the U84 can be searched for specific elements. Networks containing the desired elements will be placed on the P150 screen, one at a time. The cursor is placed on the specified element. (Example of search for ⊣⊢ 10001)

There are three setting methods as shown below.

- Symbol (element function) setting
- Reference number setting
- Symbol and reference number settings

POINT

- Reference number not displayed in the network can also be searched, except in special case.



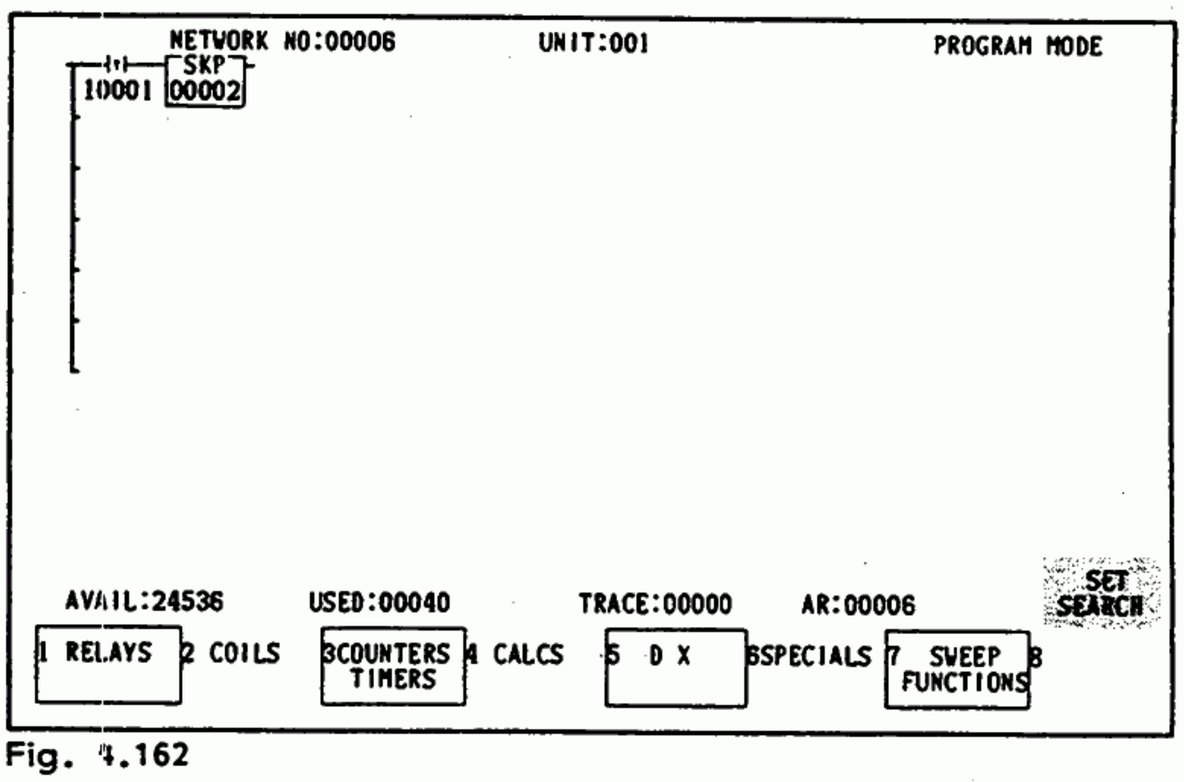


Fig. 4.162

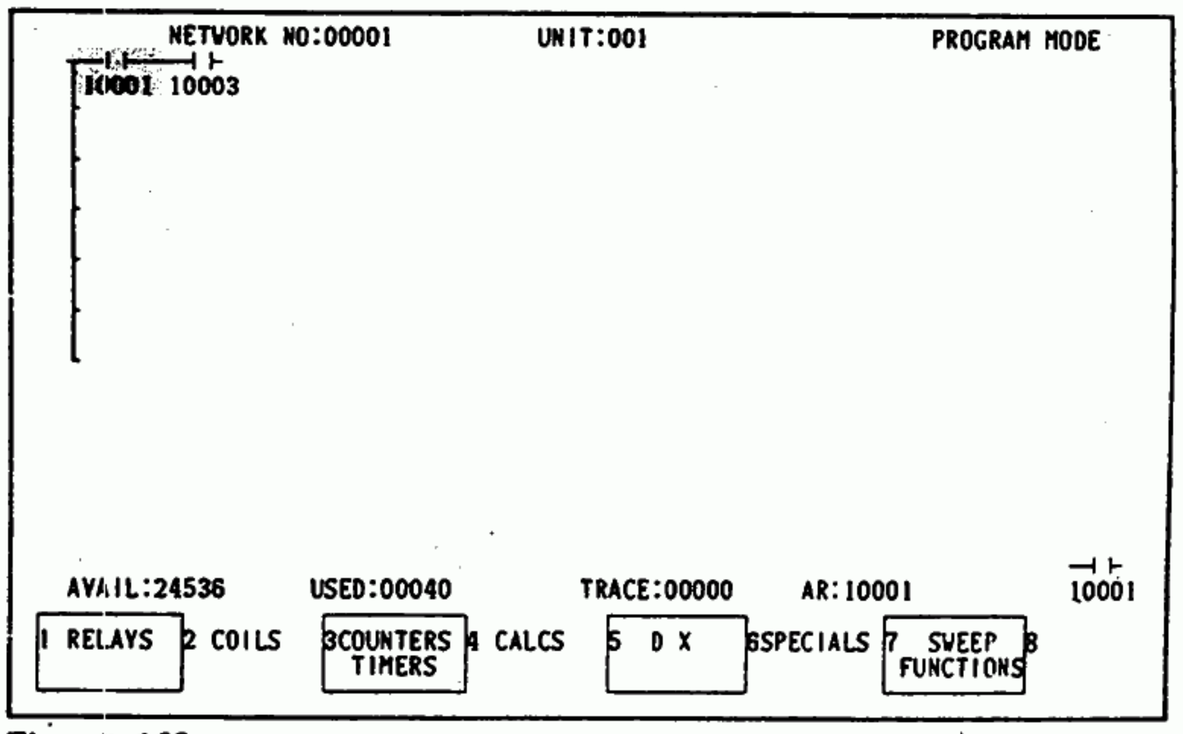
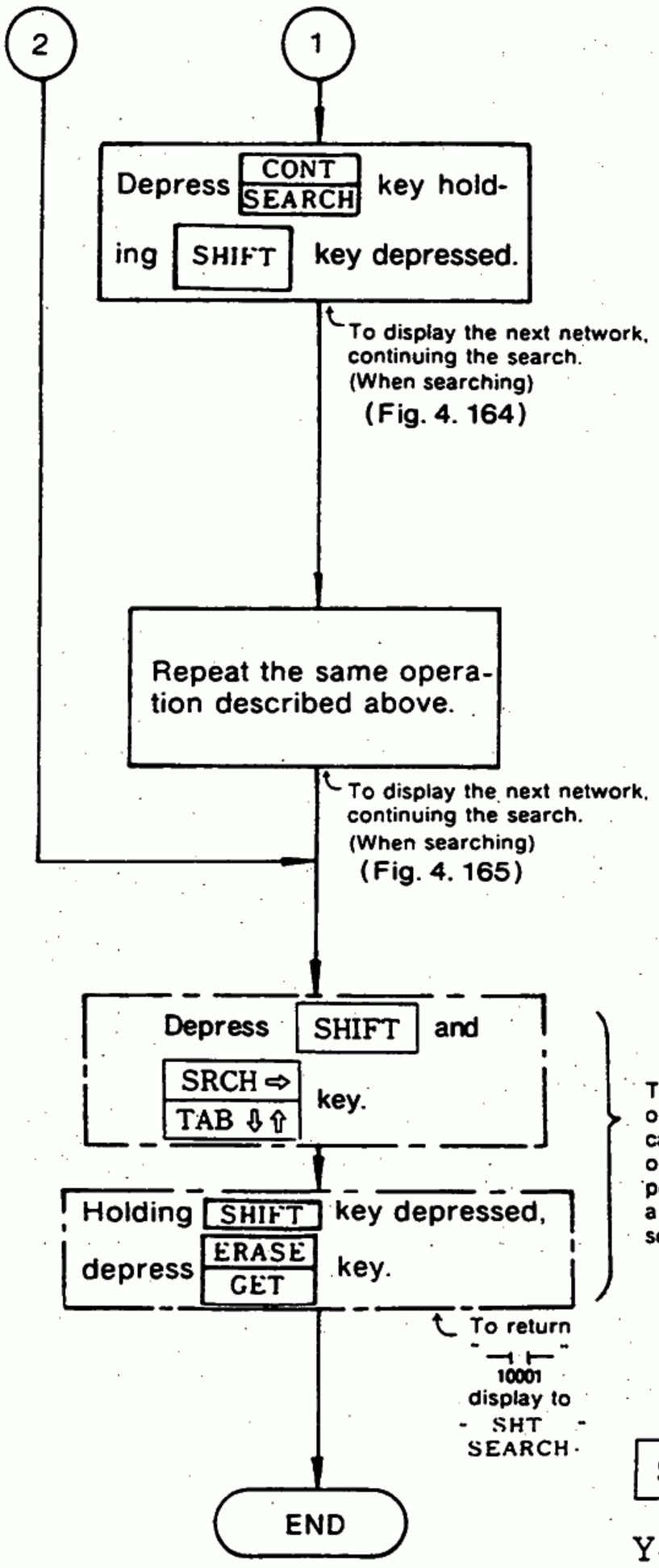


Fig. 4.163



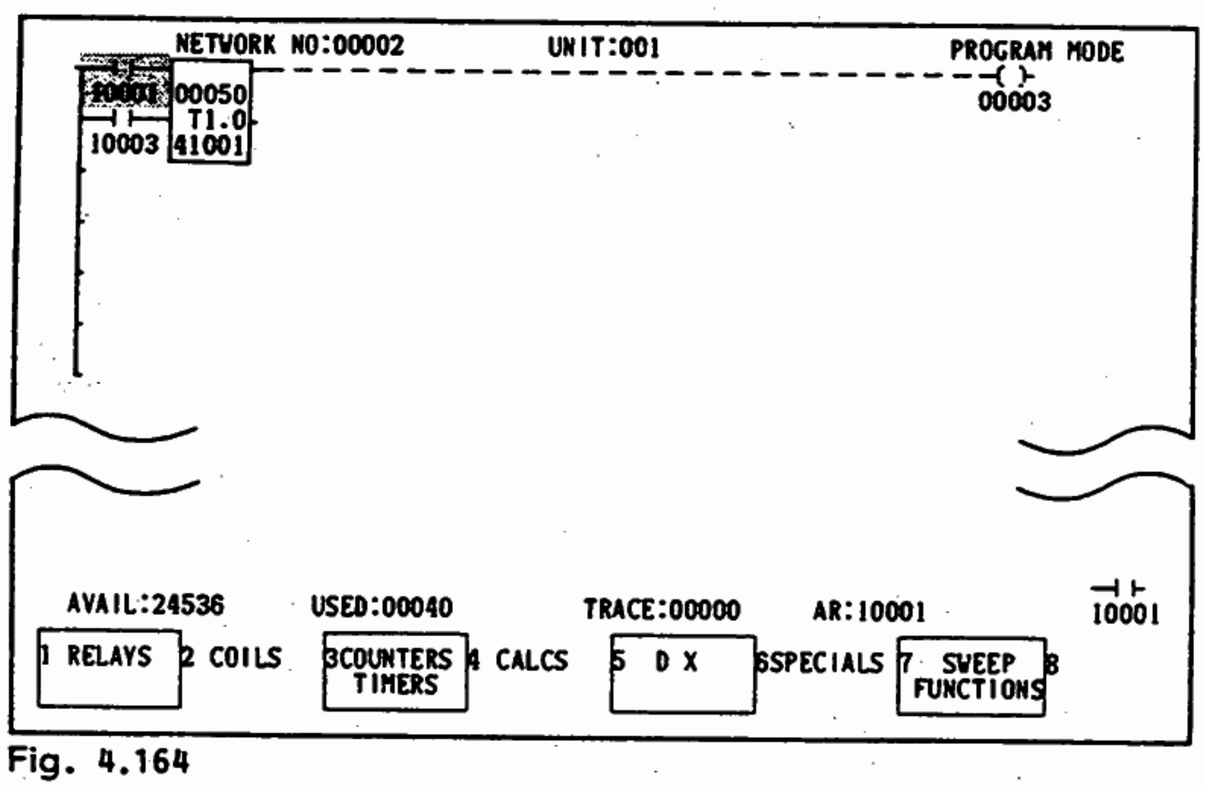


Fig. 4.164

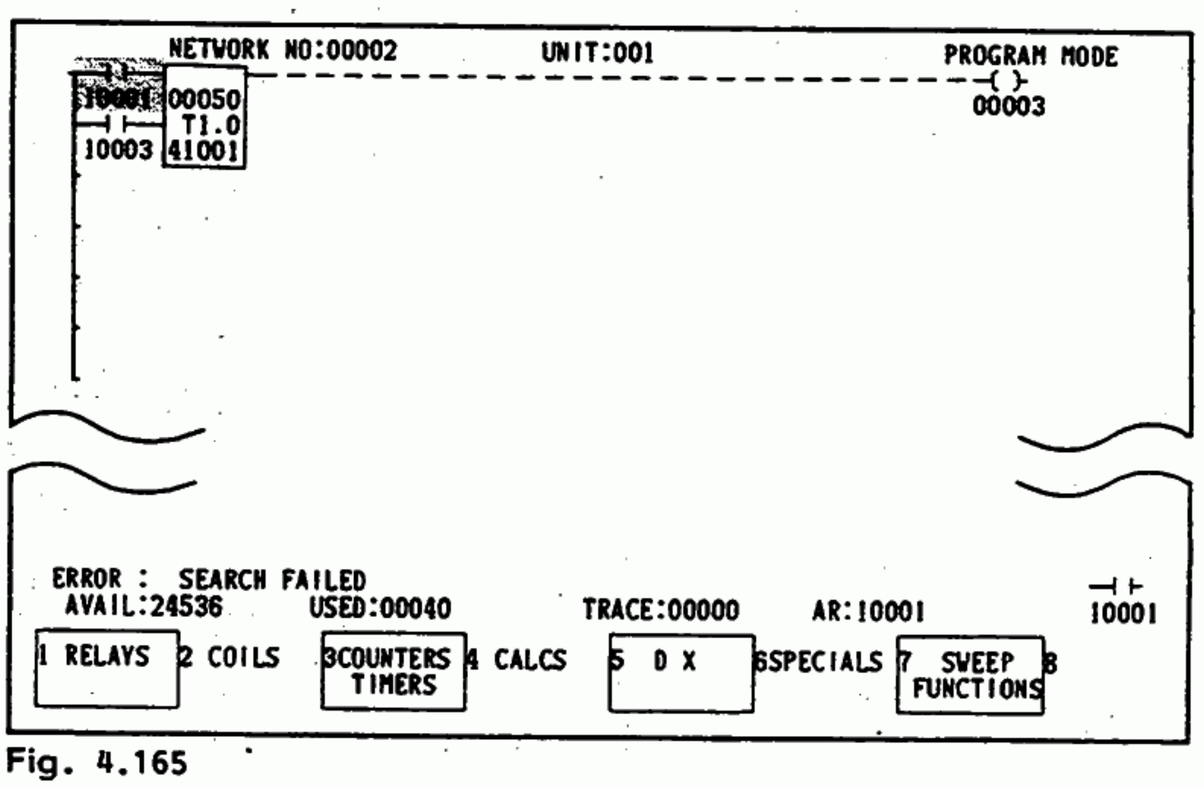


Fig. 4.165

SEARCHING LIMITATIONS

You cannot perform the following searching functions:

- Constant searching
- Searching for the destination reference used in DIBT and DIBR functions.
- Searching for the source reference used in SIBT and SIBR functions.
- Searching by specifying both the symbol and reference number for 2- or 3- element function (except for the reference number in the lower position).

NOTE

1. When ATTACH operation has already been completed, or the monitoring can be performed, this step can be skipped.
2. Where the cursor is placed in " SET " SEARCH and label for selecting functions display not appear, depress [PRINT / CHG NODE] key.
3. Where the symbol is set prior to the reference number setting, "ALL" instead of the reference number is displayed. Furthermore, where the set symbol is changed for any symbol in another function group, "ALL" is displayed instead of the reference number.
4. Sample settings of search parameter
   - [DISABLE ALL] : Searching of all coils and input relays in Disable status
   - [40084] : Searching of the holding register 40084
   - [WRIT ALL] : Searching of all WRIT elements
   - [—(L)— ALL] : Searching of all latched coils
5. When the cursor is moved from " SET " SEARCH position to logic area, depress [SRCH⇨ / TAB⇩⇧] key.

(1) SEARCH ②

This function is utilized to search coils and input relays in Disable status. It is usefull if you forget to clear Disable status (to Enable).

POINT

- Use the same essentials described in SEARCH (1).
- After searching, in addition to the network display, the status messages appear.

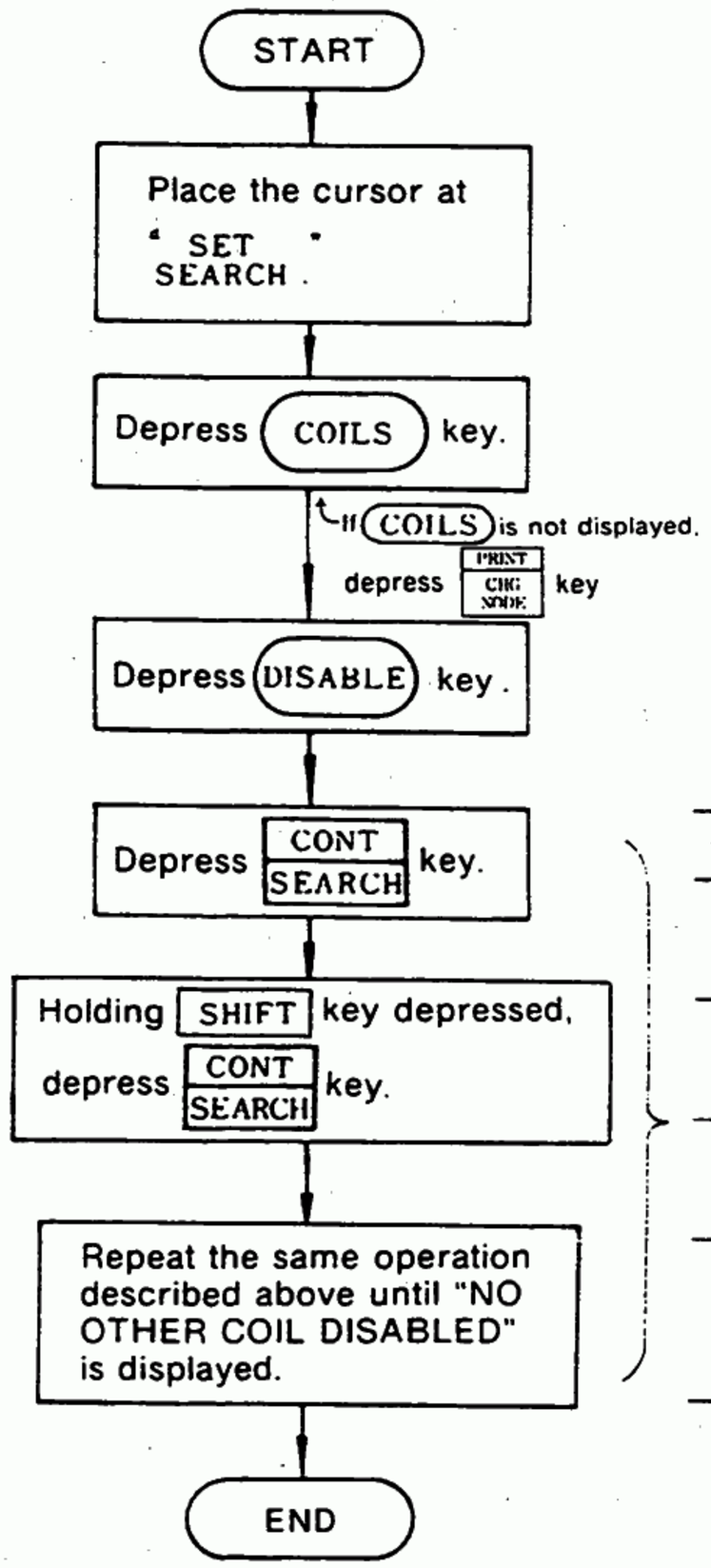


Table 4.7

Message	Description
DISCRETE 0×××× DISABLED (USED)	The coil 0×××× has already been programmed and is disabled.
DISCRETE 0×××× DISABLED (NOT USED)	The coil 0×××× has not been programmed but is disabled.
DISCRETE 1×××× DISABLED	The input relay 1×××× is in the Disable status.
NO OTHER COIL DISABLED	It appears during search procedures when all disabled coils and input relays have been found.

NOTE

Displays in the logic area, the reference area and the expanding reference area remain on the screen.

Table 4.8 Label Displays for Selecting the Search Element Functions

Label Keys \ Label Displays	1 RELAYS 2	COILS	3 COUNTERS TIMERS 4	CALCS	5 DX 6	SPECIALS	7 SWEEP FUNCTIONS 8
RELAYS	1 -|/|- 2		-||- 4	-||-	5 — 6		7 I 8
COILS	1 -( )- 2	-(L)-	3 4		5 ENABLE 6	DISABLE	7 FORCE ON 8 FORCE OFF
COUNTER TIMERS	1 UCTR 2	DCTR	T1.0 4	T 0.1	5 T.01 6		7 I 8
CALCS	1 ADD 2	SUB	3 MUL 4	DIV	5 SQRT 6		7 8 NEXT MENU
	1 DADD 2	DSUB	3 DMUL 4	DDIV	5 DSQR 6		7 PREVIOUS MENU 8
DX	1 R→T 2	T→R	3 T→T 4	BLKM	5 FIN 6	FOUT	7 8 NEXT MENU
	1 SRCH 2	STAT	3 DIBT 4	DIBR	5 SIBT 6	SIBR	7 PREVIOUS MENU 8 NEXT MENU
	1 AND 2	OR	3 CMPR 4	SENS	5 MBIT 6	COMP	7 PREVIOUS MENU 8 NEXT MENU
	1 XOR 2	BROT	3 MROT 4	TWST	5 READ 6	WRIT	7 PREVIOUS MENU 8
SPECIALS	1 SKP 2		3 4		5 6		7 8

(2) TRACE, RETRACE

1. When any relay contact (0××××) on the screen is specified and traced, the trace function forms the network that drives the referenced coil corresponding to the relay contact. The same operation should be repeated until your job on the trace is completed.
2. The retrace function allows the user to return to the network that was displayed prior to performing a trace, using the reverse procedures of the trace.
3. When any input relay or register on the screen is specified and traced, the specified reference status is displayed in the reference area, and then the trace operation is interrupted. With the cursor placed in the logic area, the specified reference status remains in the reference area.

POINT

- The relay contact (0××××) used in the data transfer function cannot be traced.

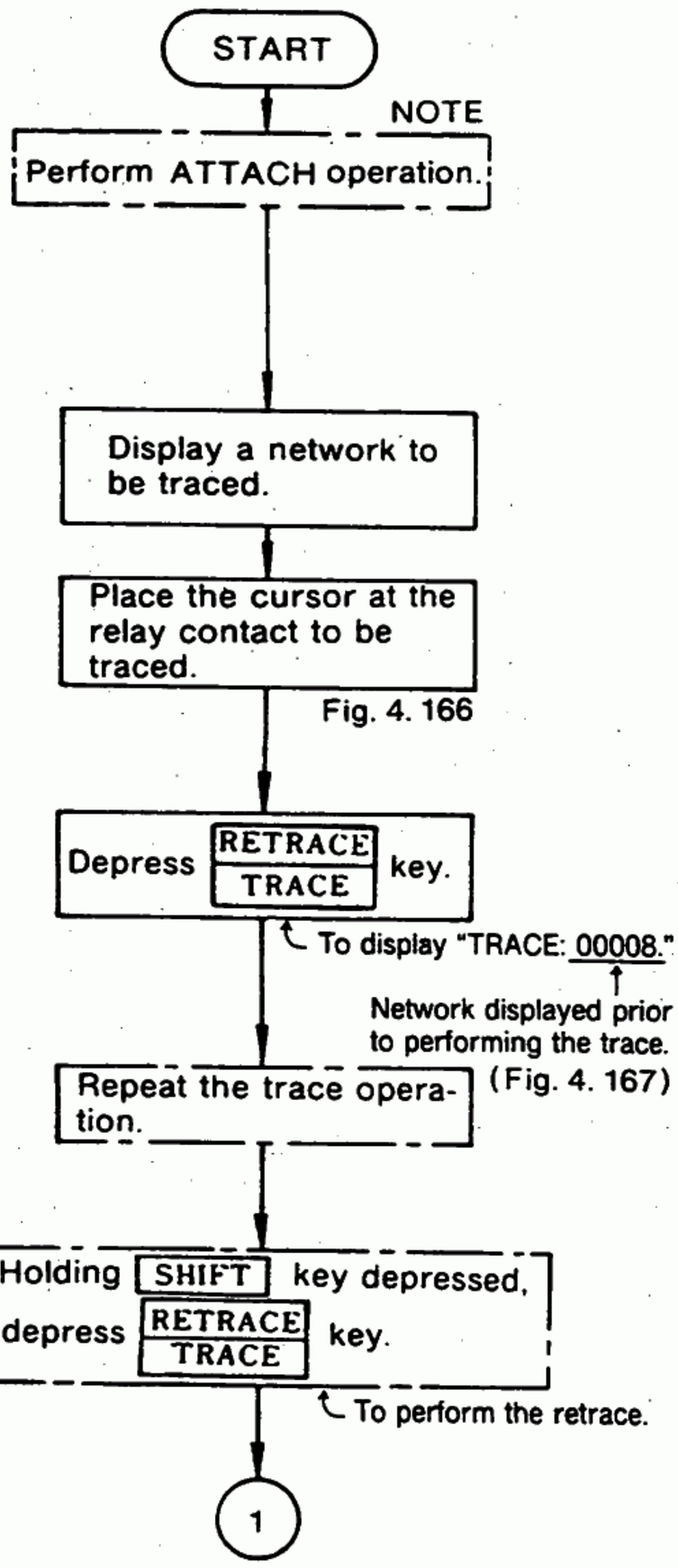


Fig. 4.166

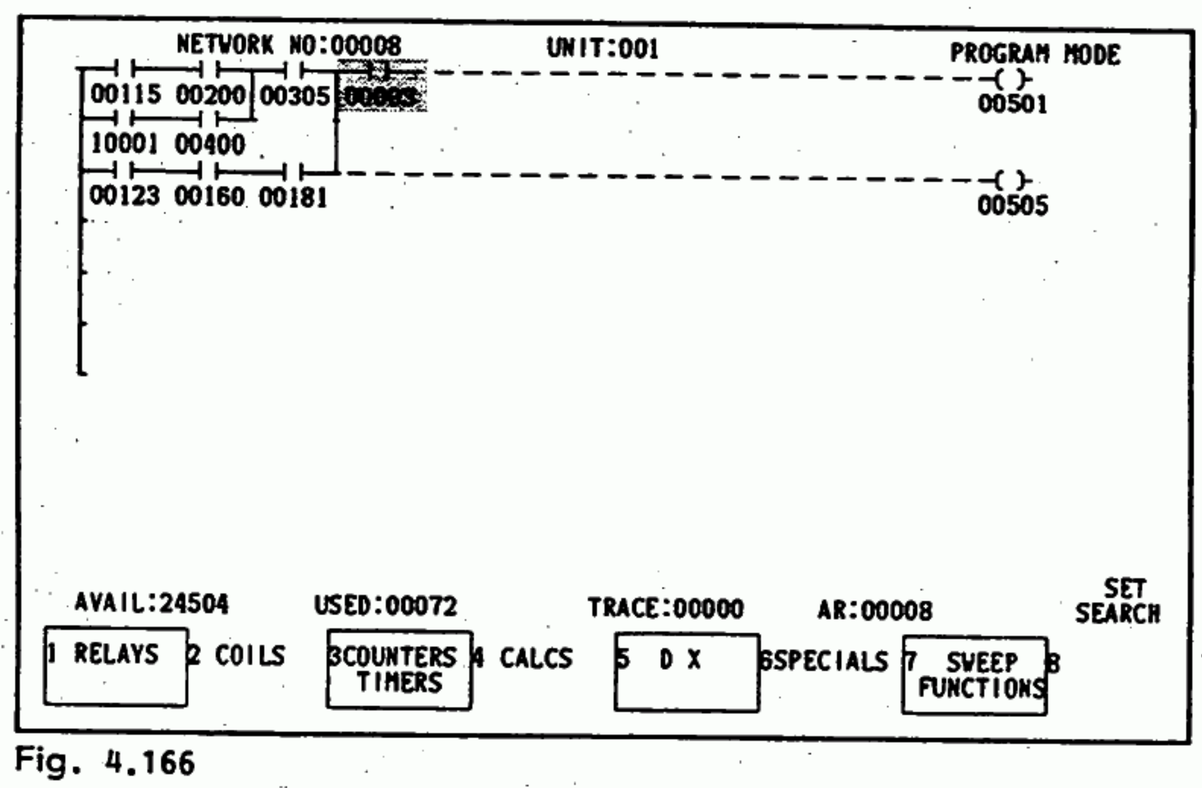


Fig. 4.166

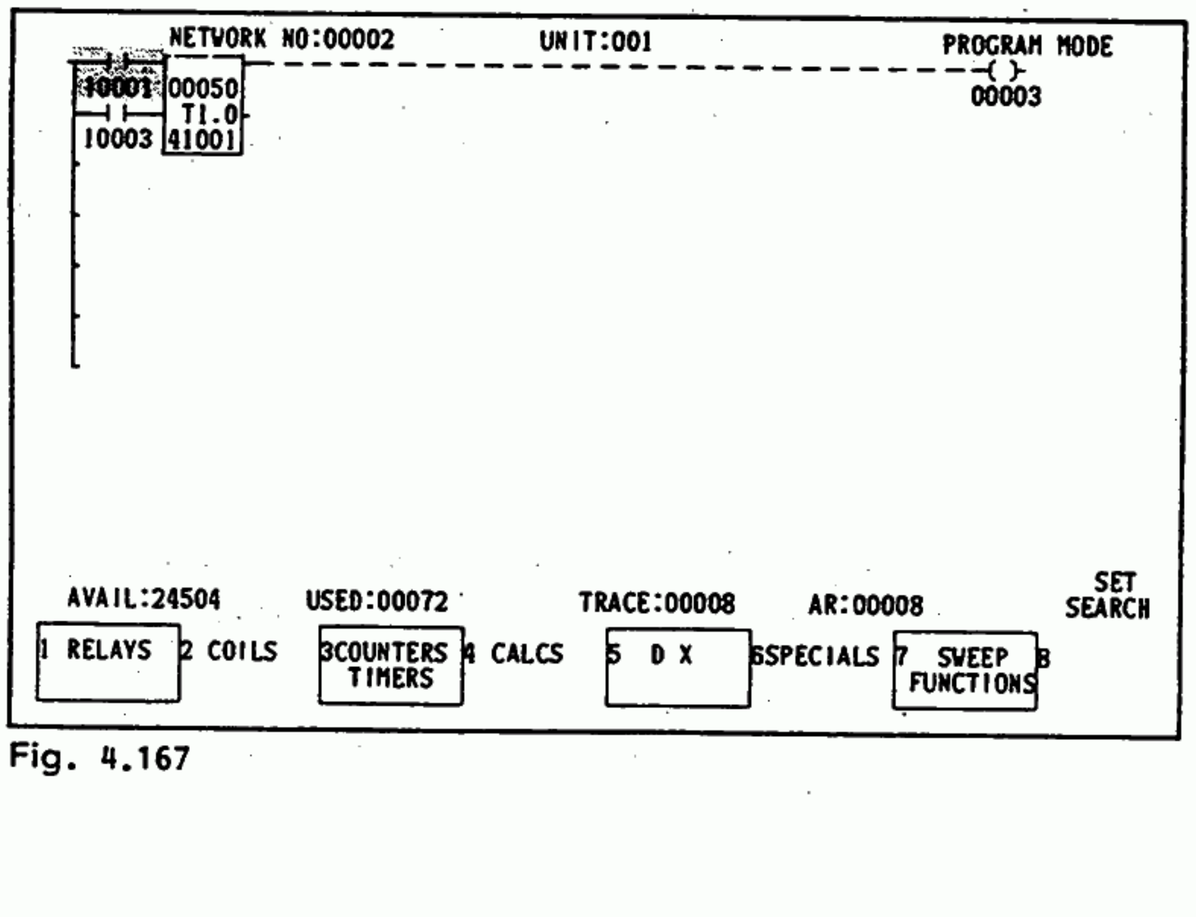
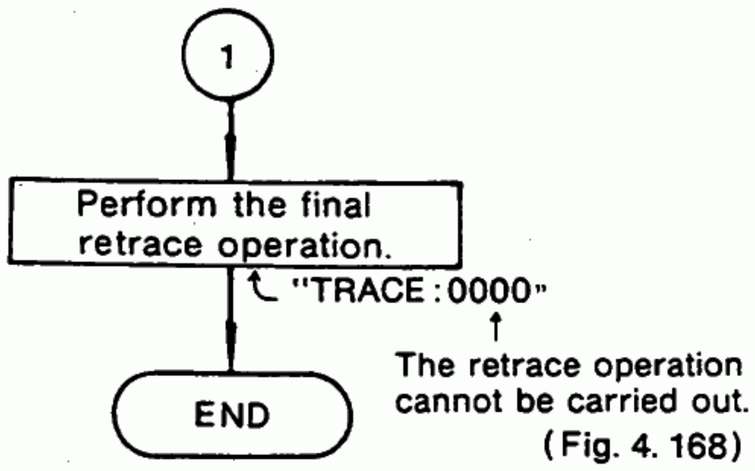


Fig. 4.167



(Fig. 4.168)

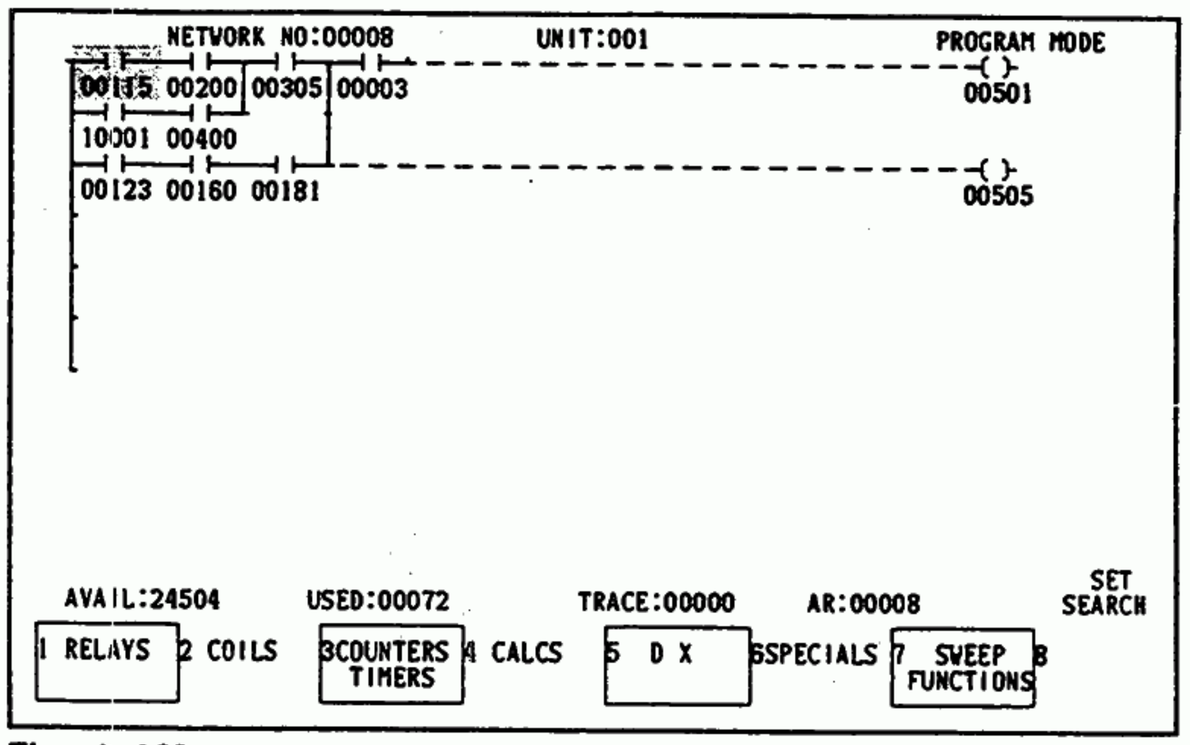


Fig. 4.168

NOTE

When ATTACH operation has already been completed, this step can be skipped.

4.6.7 SCAN CONTROL

(1) CONSTANT SWEEP

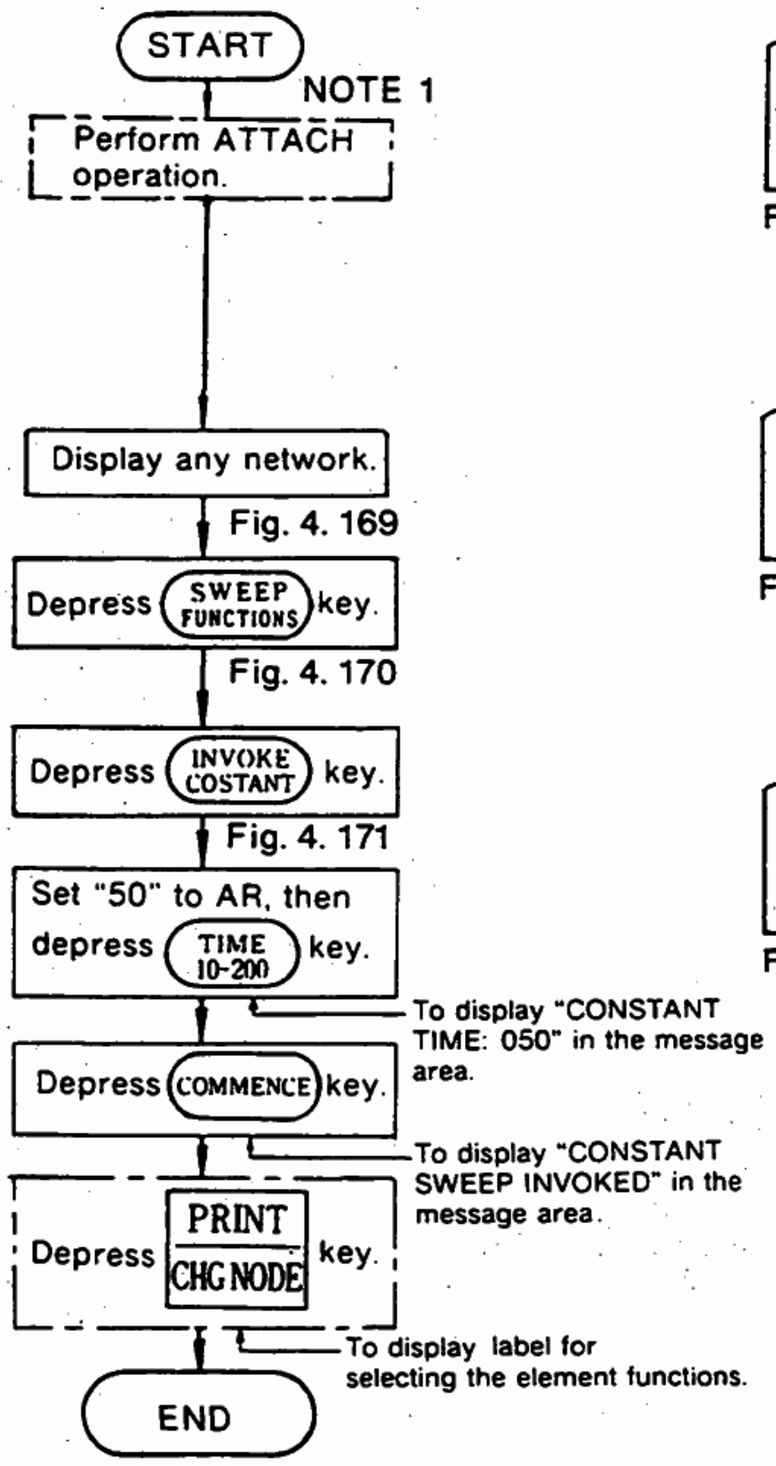
PROGRAM MODE

The constant sweep is a function to make a constant scan time by setting an objective scan time of the U84. As a result, accuracy of simple positioning control can be gained. Example of objective scan time, 50 ms is shown below.

POINT

- An objective scan time must be larger than an actual scan time. Set any value of 10 to 200 ms in the unit os 10 ms, as the objective scan time, to the holding register 49998.
- If smaller than the actual scan time, the objective scan time is disregarded.
- When using the constant sweep function, the following two registers are occupied:
  - 49998 – Objective scan time setting
  - 49999 – Actual scan time (varied in units of 10 ms)

  When not using the constant sweep function, these two registers can be used in any way the user prefers.



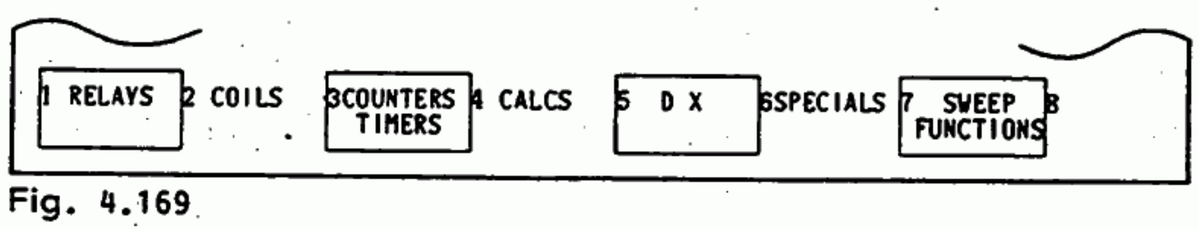


Fig. 4.169

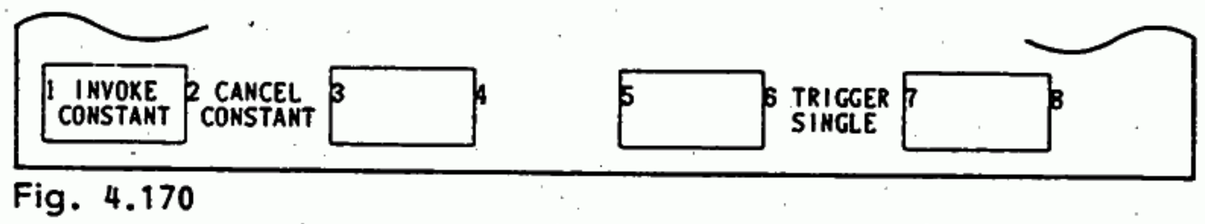


Fig. 4.170

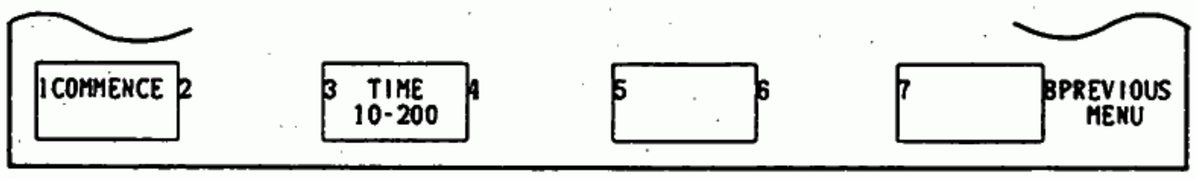


Fig. 4.171

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.

2. If the labels for selecting the element functions are not displayed on the screen. Depress [PRINT / CHG NODE] key.

3. The holding registers 49998 and 49999 should not be used for other applications except when the constant sweep operation is not activated.

4. If a value more than 200 ms is set to the holding register 49998 during constant sweep, it is used as 200 ms.

5. To clear the constant sweep, depress (CANCEL CONSTANT) key.

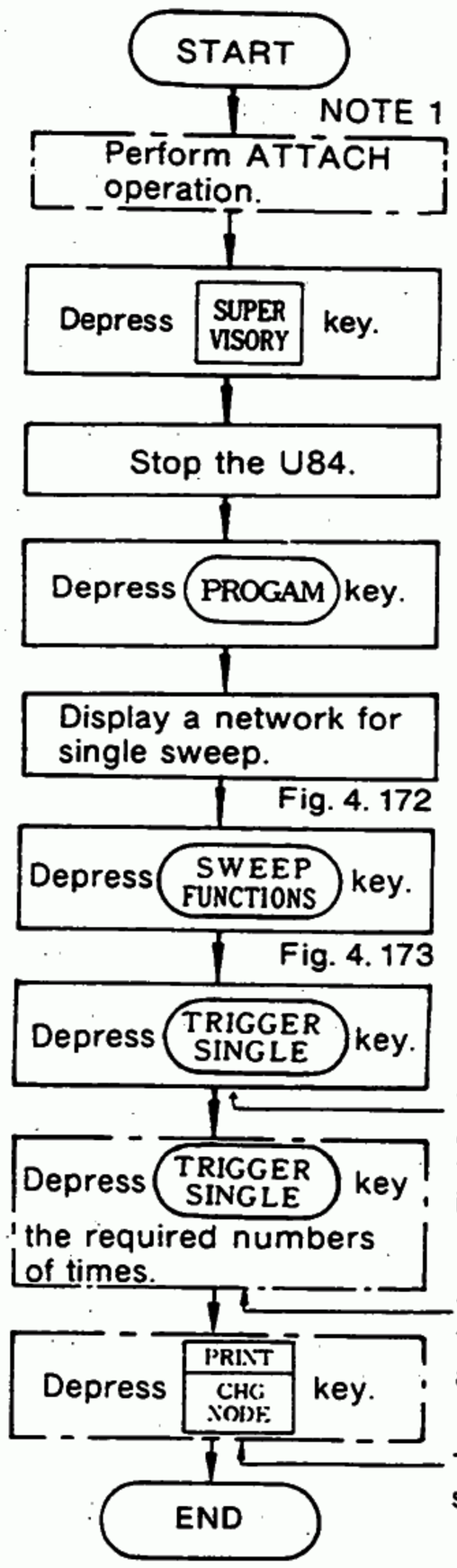
6. Where a detailed scan time is required, create a ladder diagram for measuring the scan time.

(2) SINGLE SWEEP

A network is solved in only one scan cycle by a single sweep operation. It is used to simulate a network operation or an arithmetic operation.

POINT

- The U84 must be at a standstill.
- Actual I/O operation is not executed for the data. A simulation requires any idea, such as input relays disabled.
- For single sweep operation, it is recommended that a network or a reference to be checked be previously displayed in the logic area or the reference area.



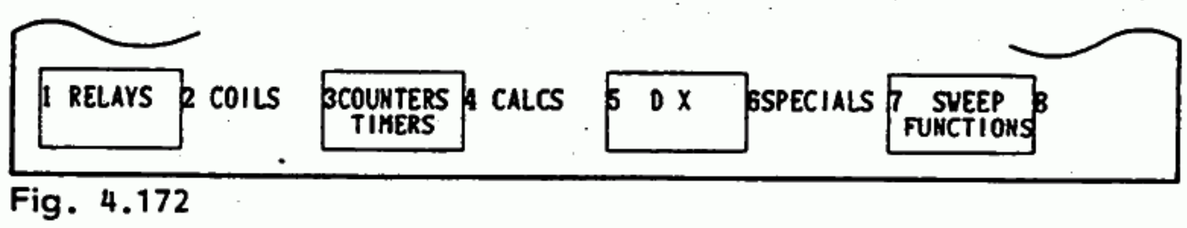


Fig. 4.172

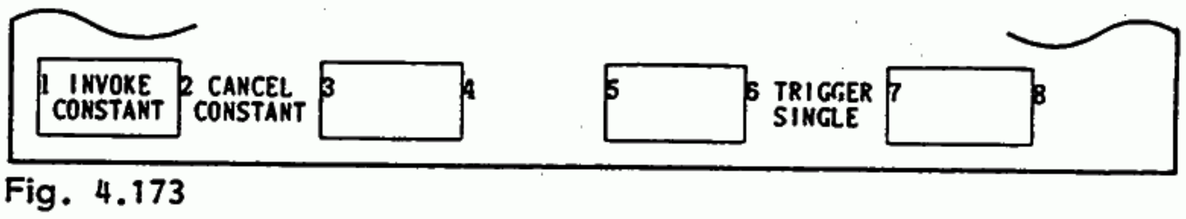


Fig. 4.173

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. If the labels for selecting the element functions are not displayed on the screen, depress PRINT / CHG NODE key.

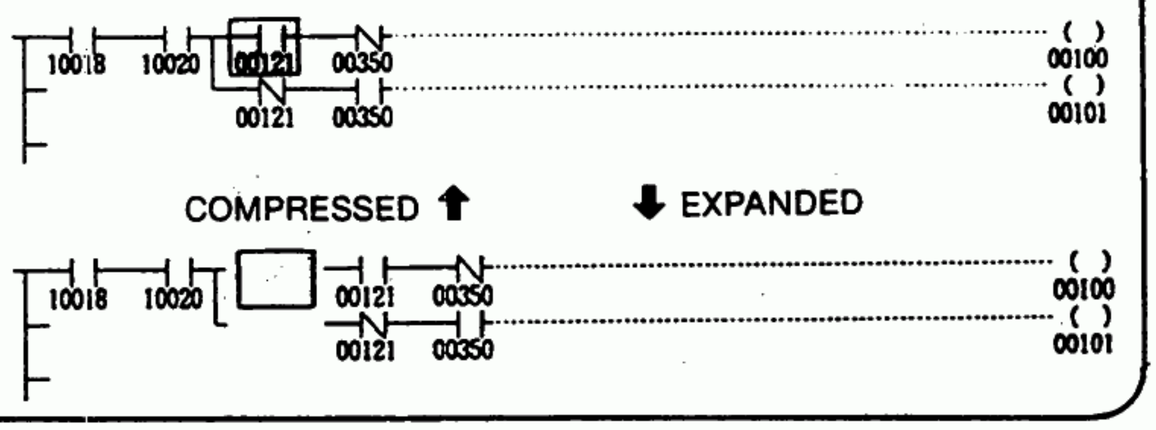
4. 7 NETWORK EDITION OPERATION

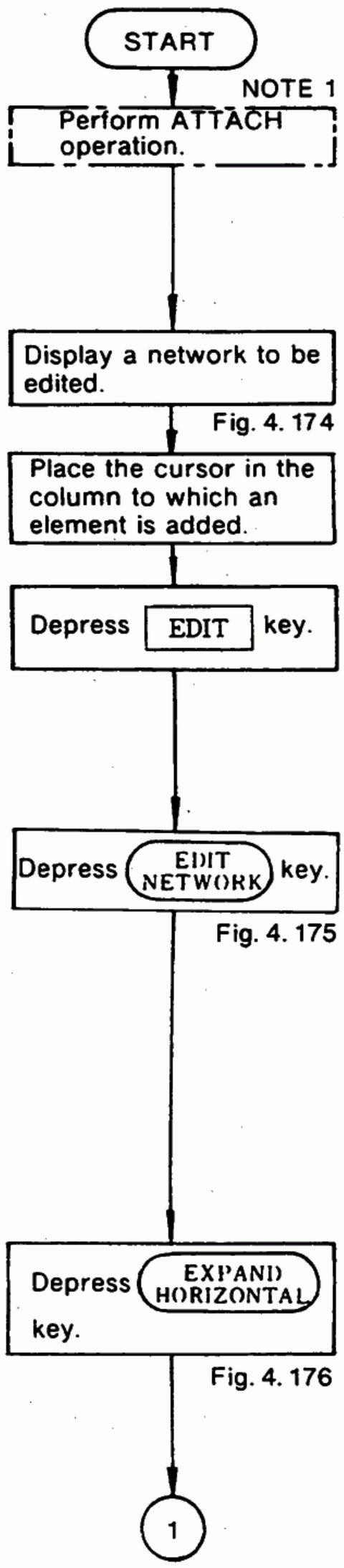
4.7.1 NETWORK EDITION

PROGRAM MODE

NETWORK EDITION ①

This is an editing function for expanding or compressing a network in a horizontal direction. The function should be used to edit every column of the network.





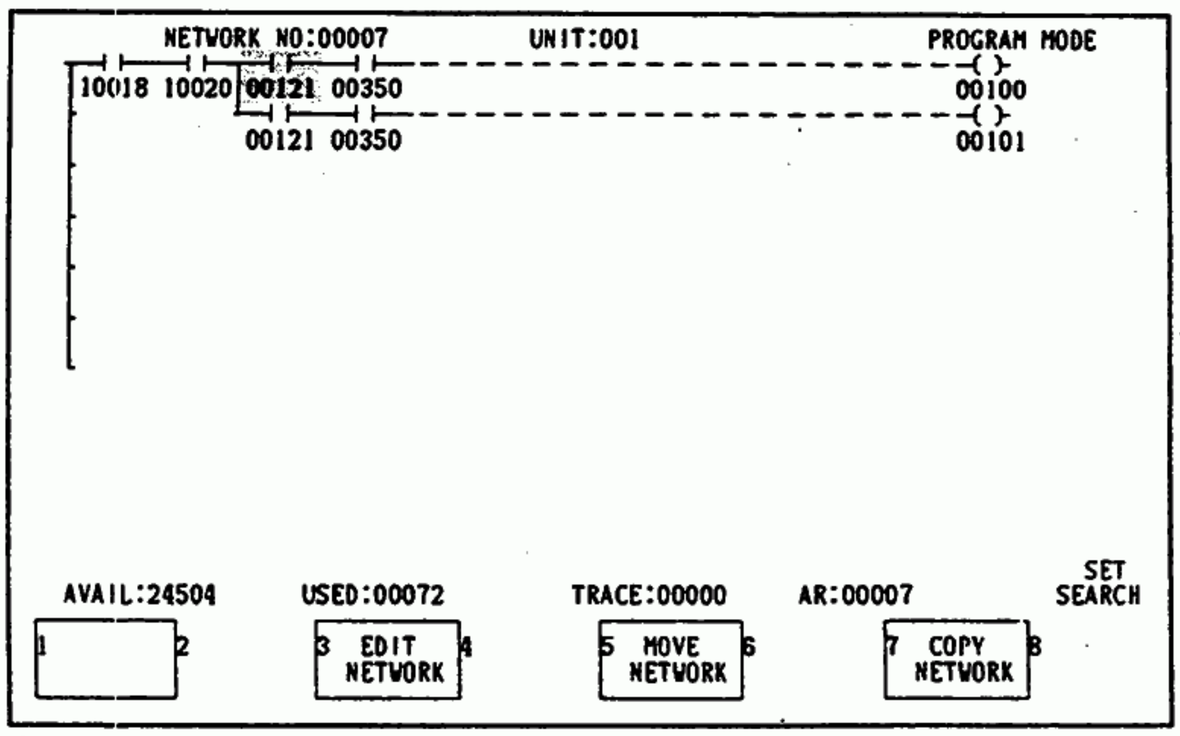


Fig. 4.174

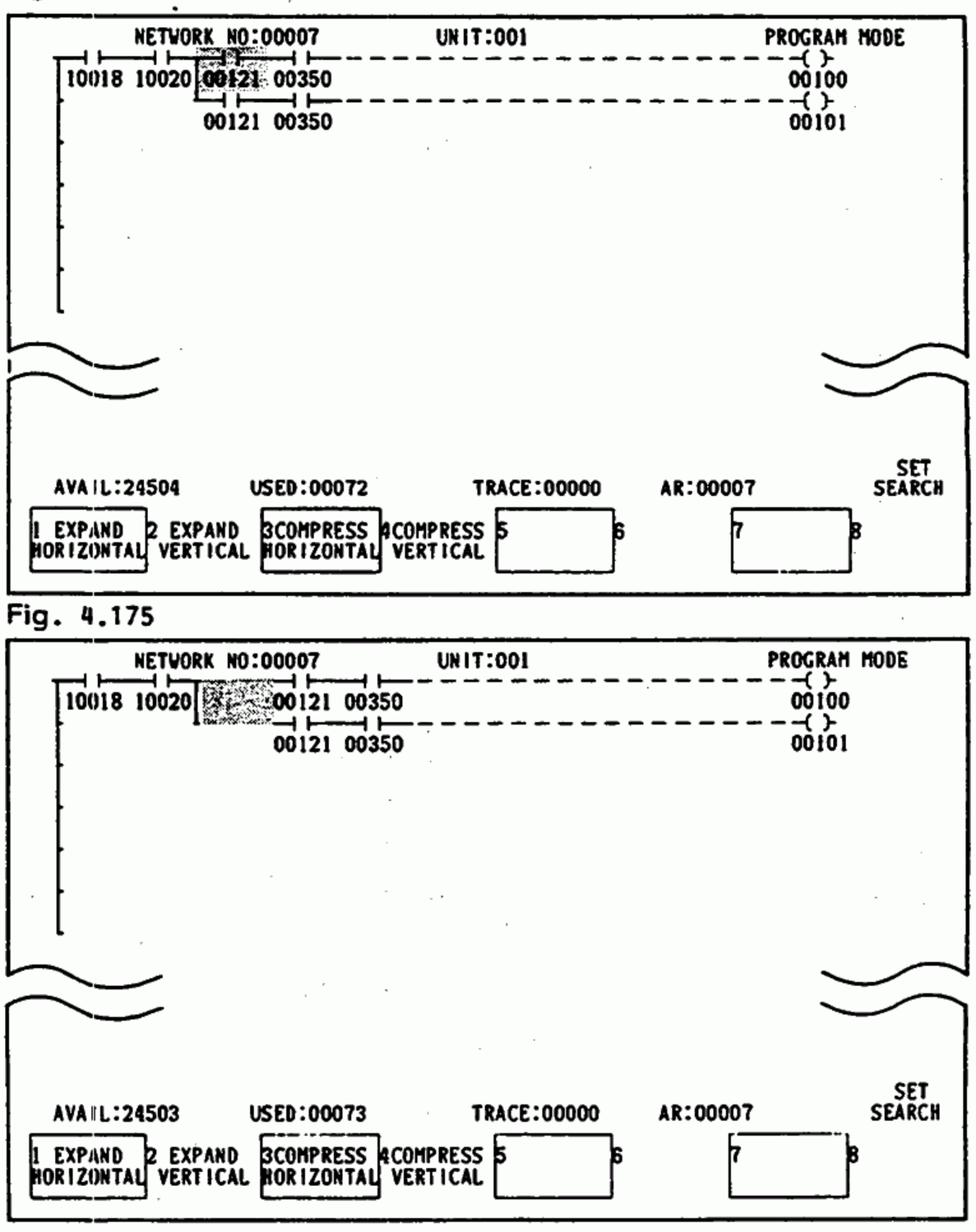


Fig. 4.175

Fig. 4.176

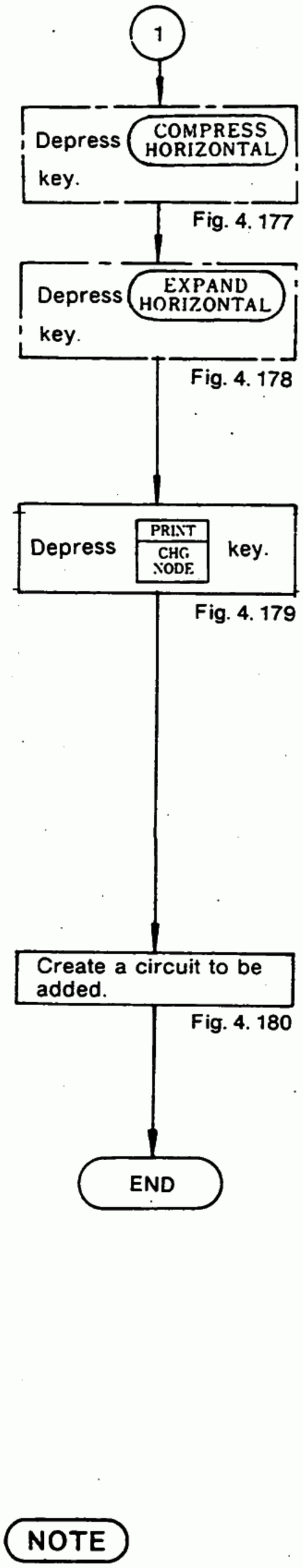


Fig. 4. 177

Fig. 4. 178

Fig. 4. 179

Fig. 4. 180

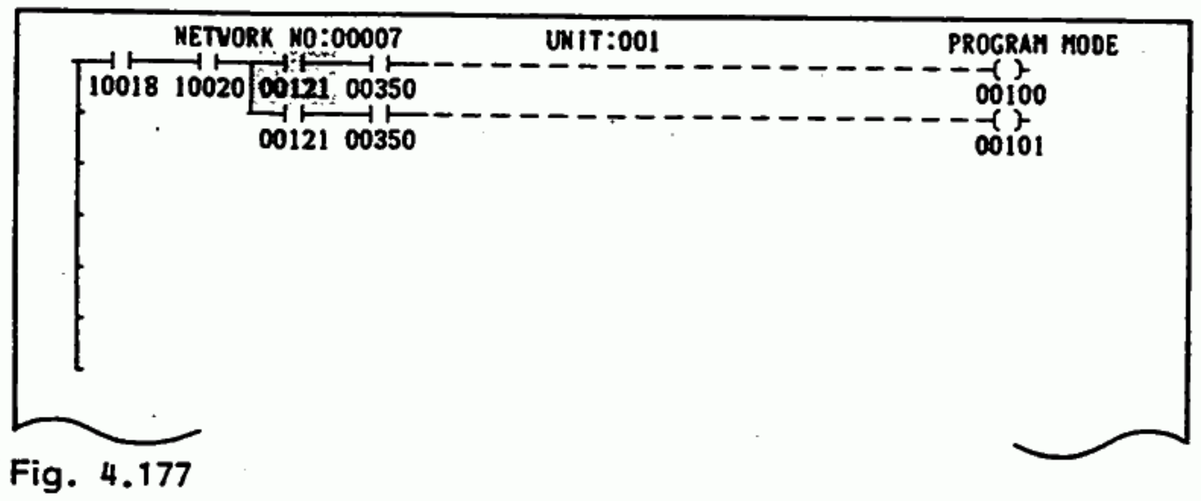


Fig. 4.177

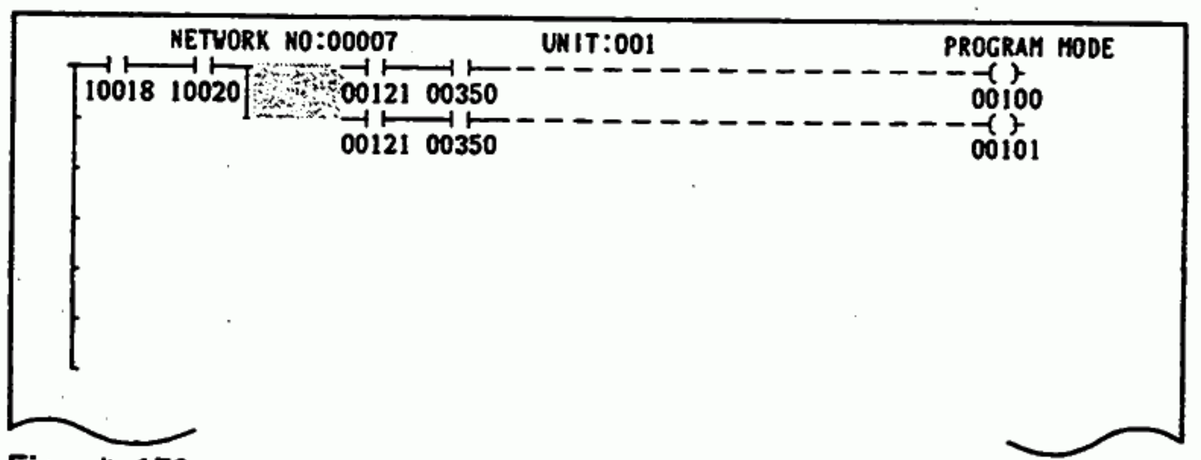


Fig. 4.178

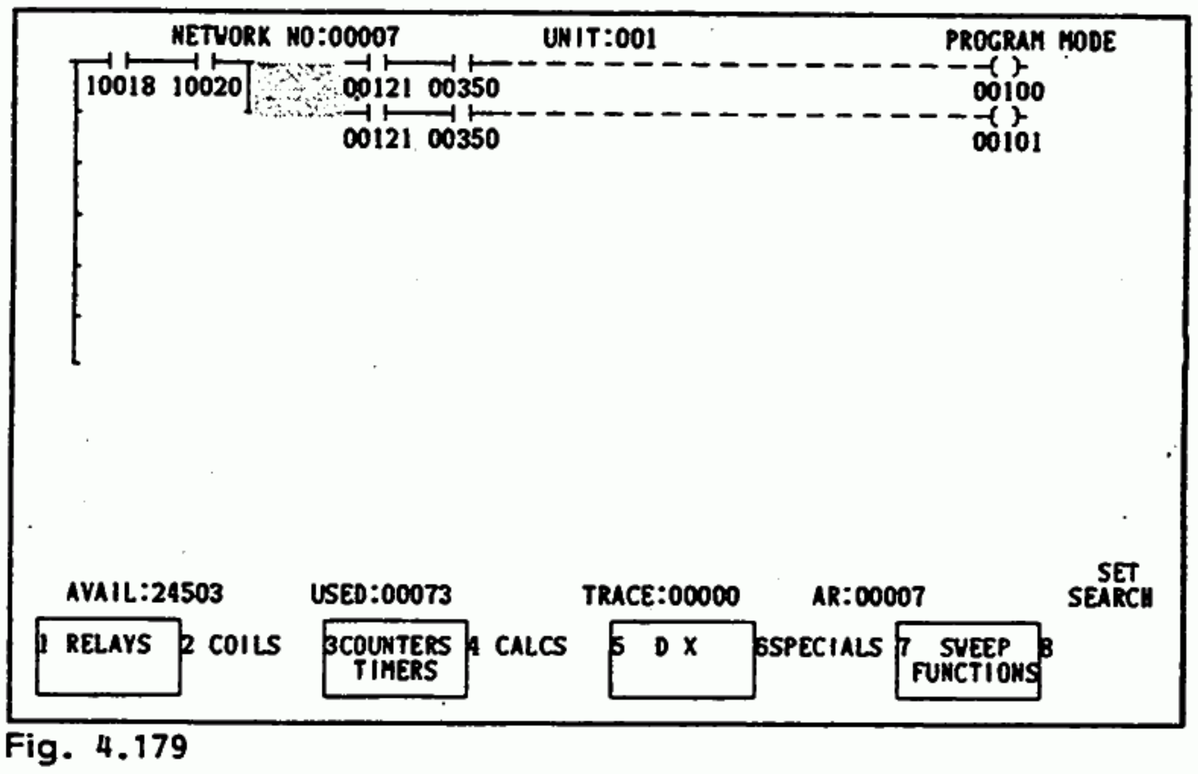


Fig. 4.179

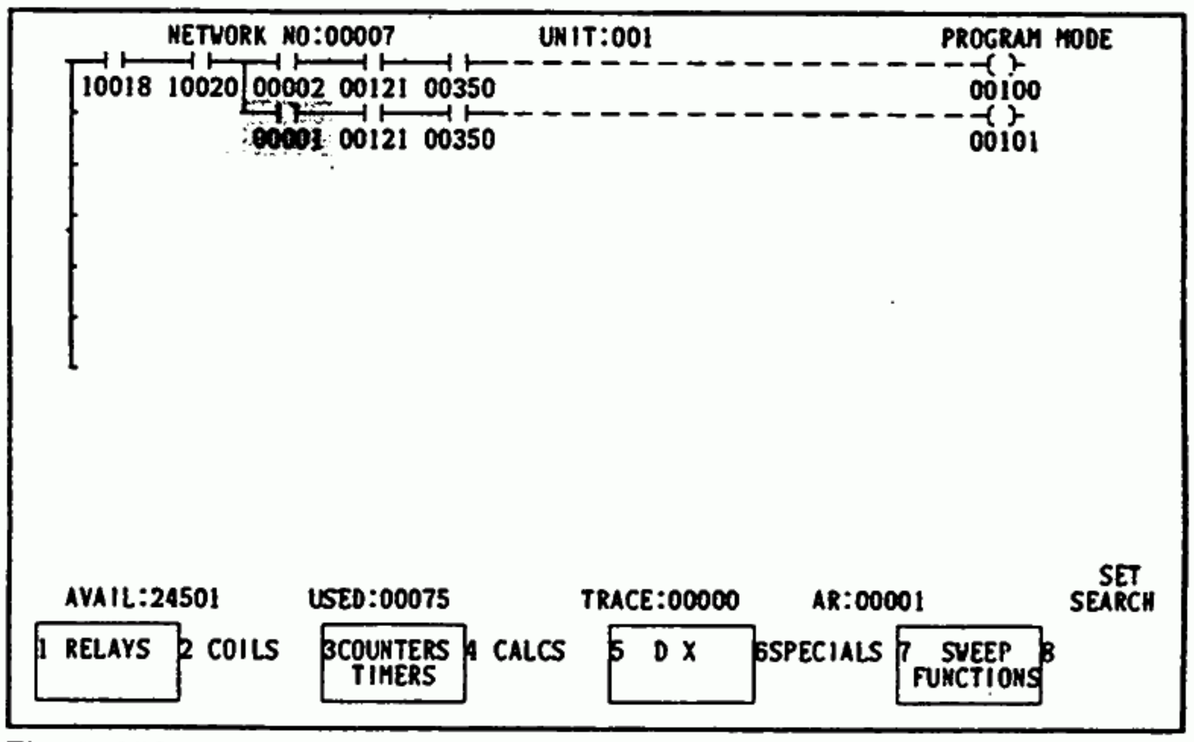


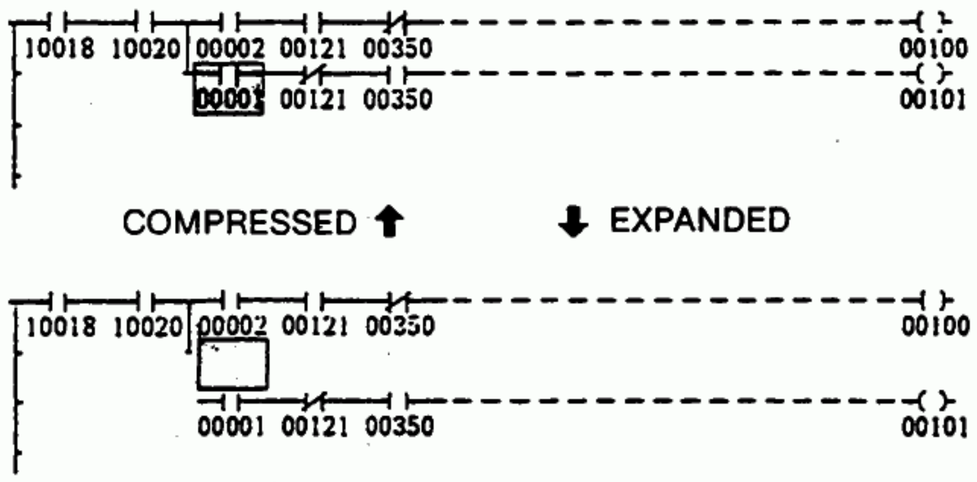
Fig.4.180

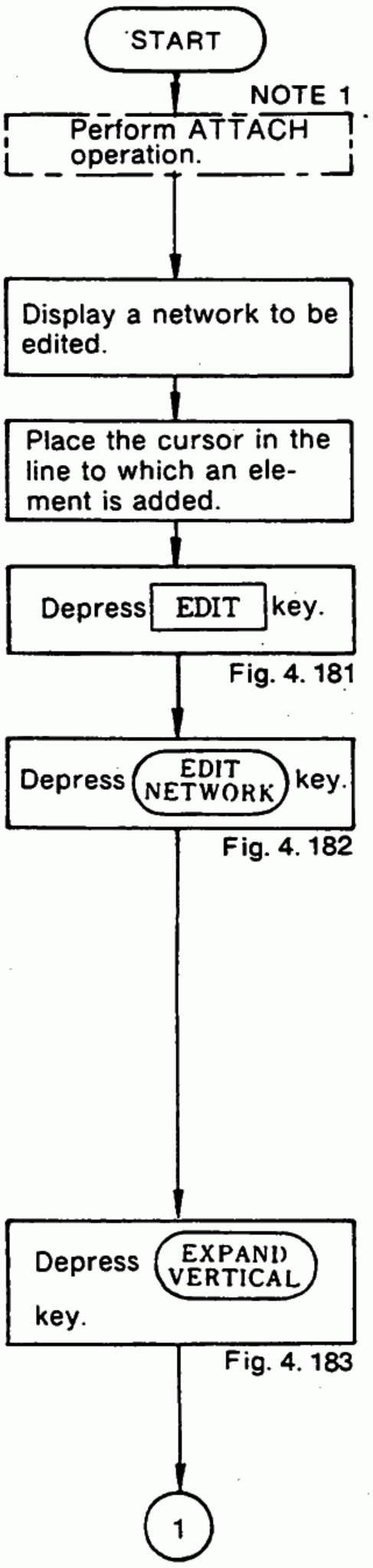
NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. Memory capacity to be used is increased by expanding a network in the horizontal direction and decreased by compressing it.
3. Depressing [PRINT / CHG NODE] key returns the current label display to the label display for selecting the element functions.

NETWORK EDITION ②

The editing function is used to expand or compress a network in a vertical direction. It is recommended that every line of the network be edited.





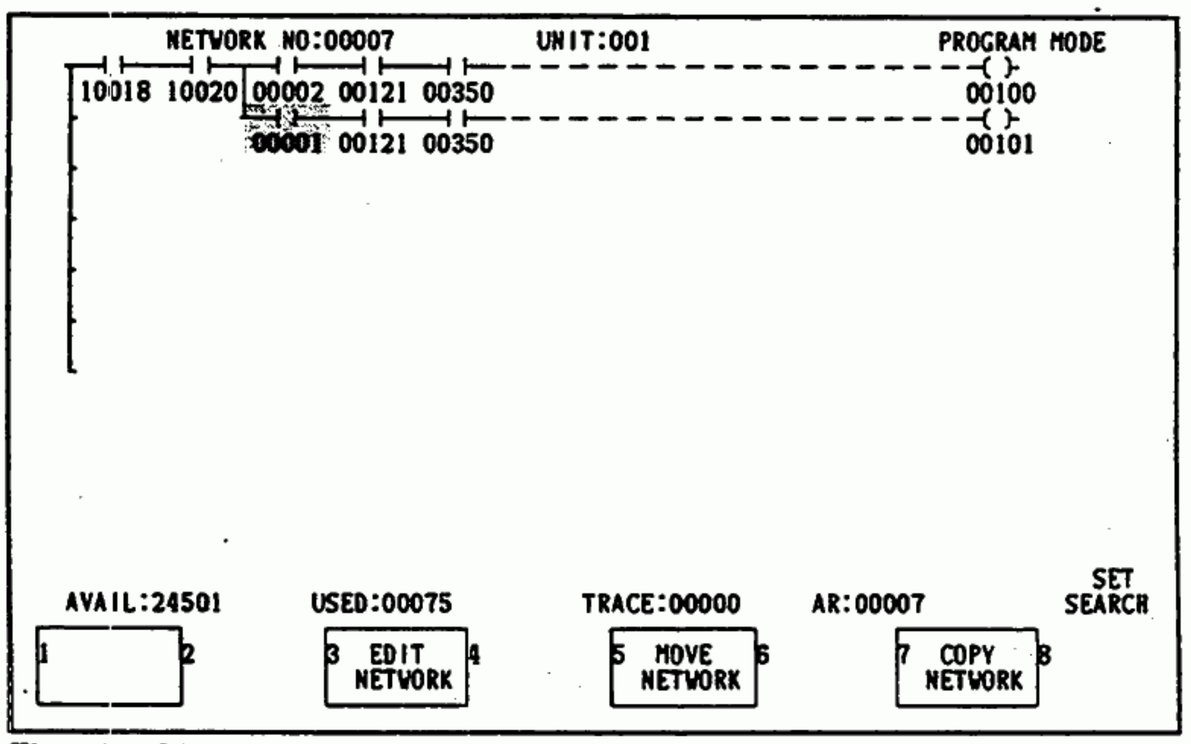


Fig. 4.181

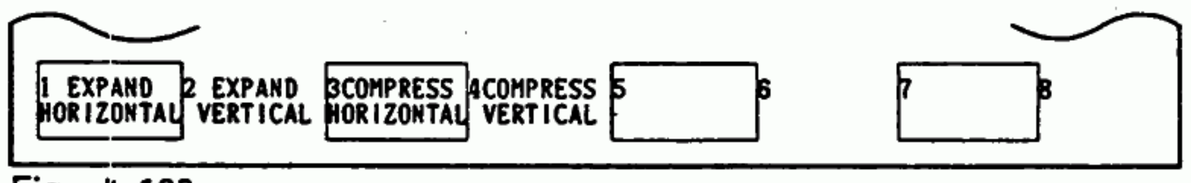


Fig. 4.182

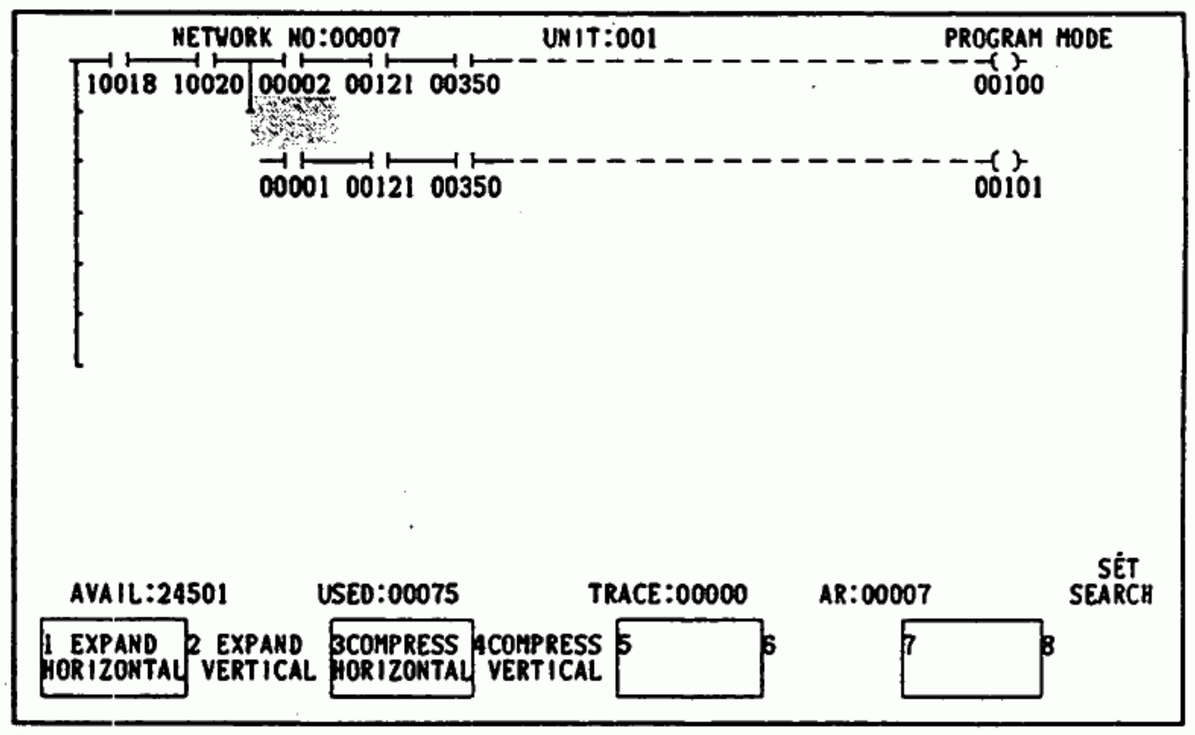


Fig. 4.183

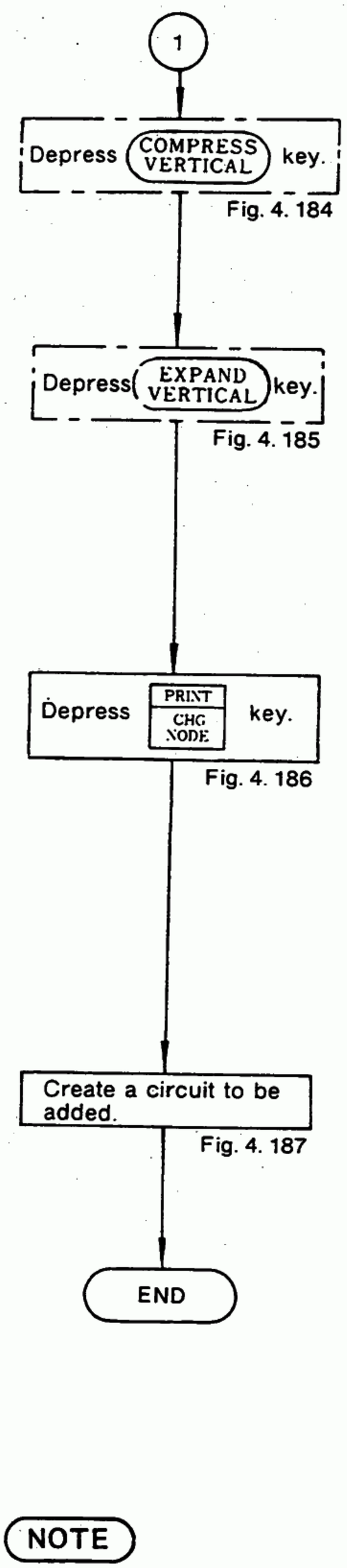


Fig. 4.184

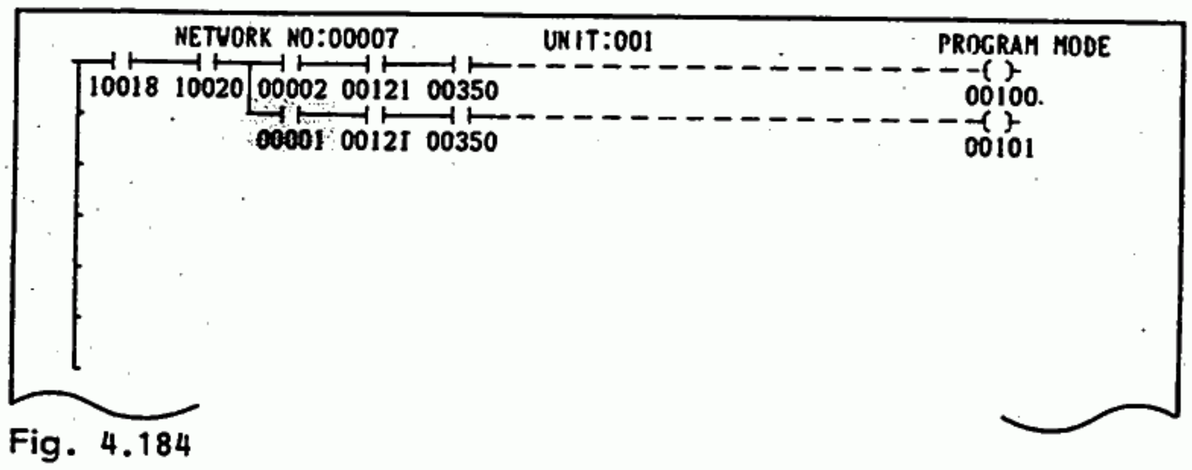


Fig. 4.184

Fig. 4.185

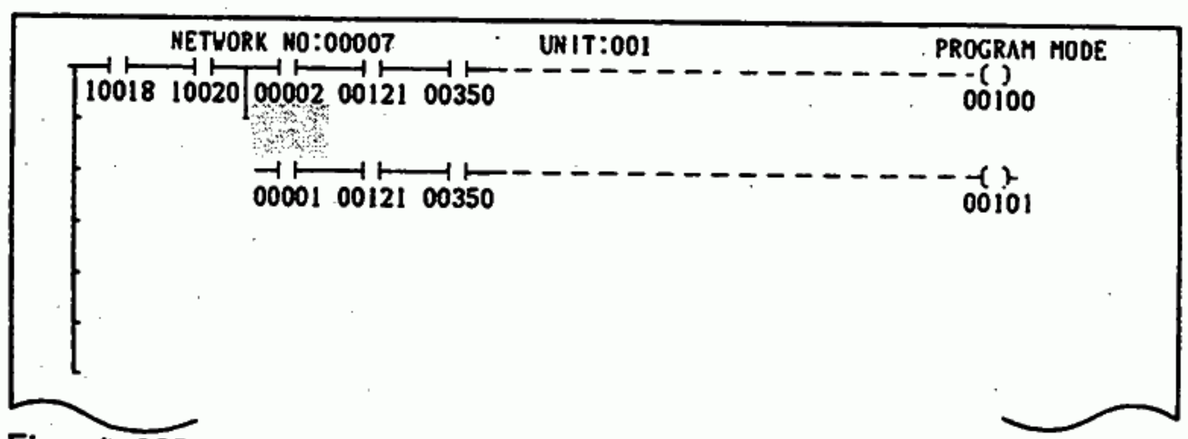


Fig. 4.185

Fig. 4.186

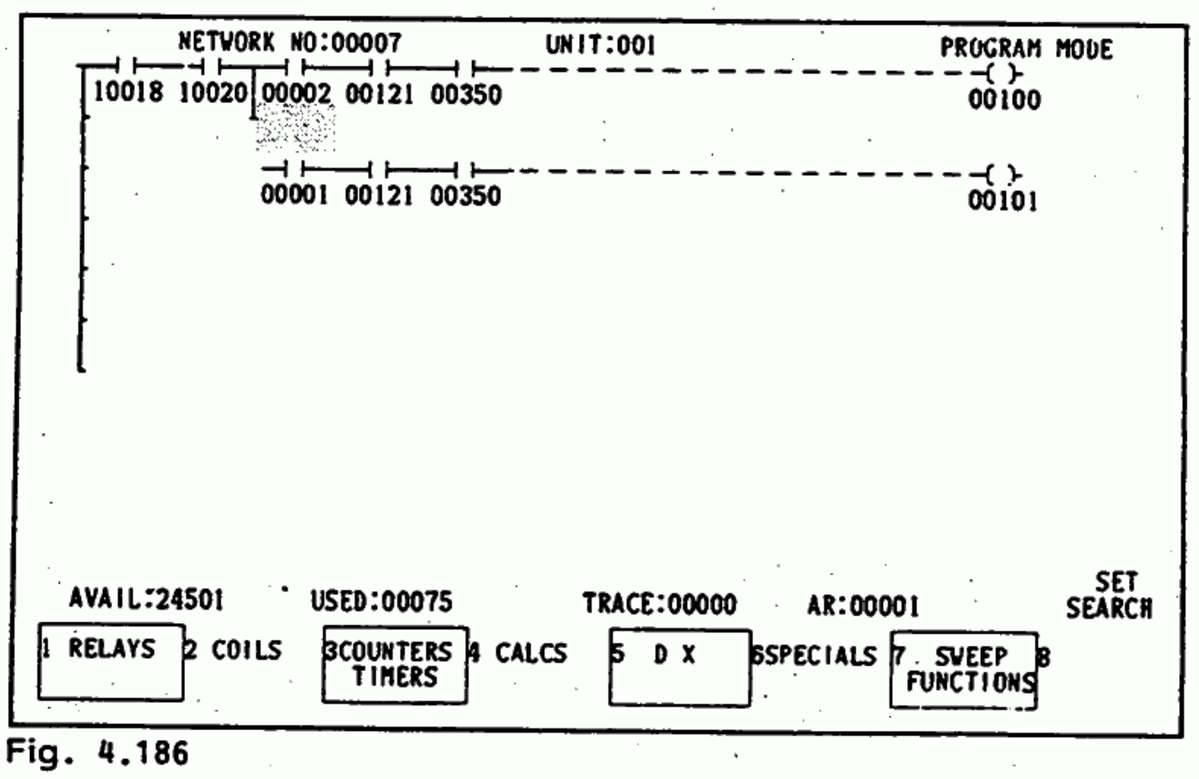


Fig. 4.186

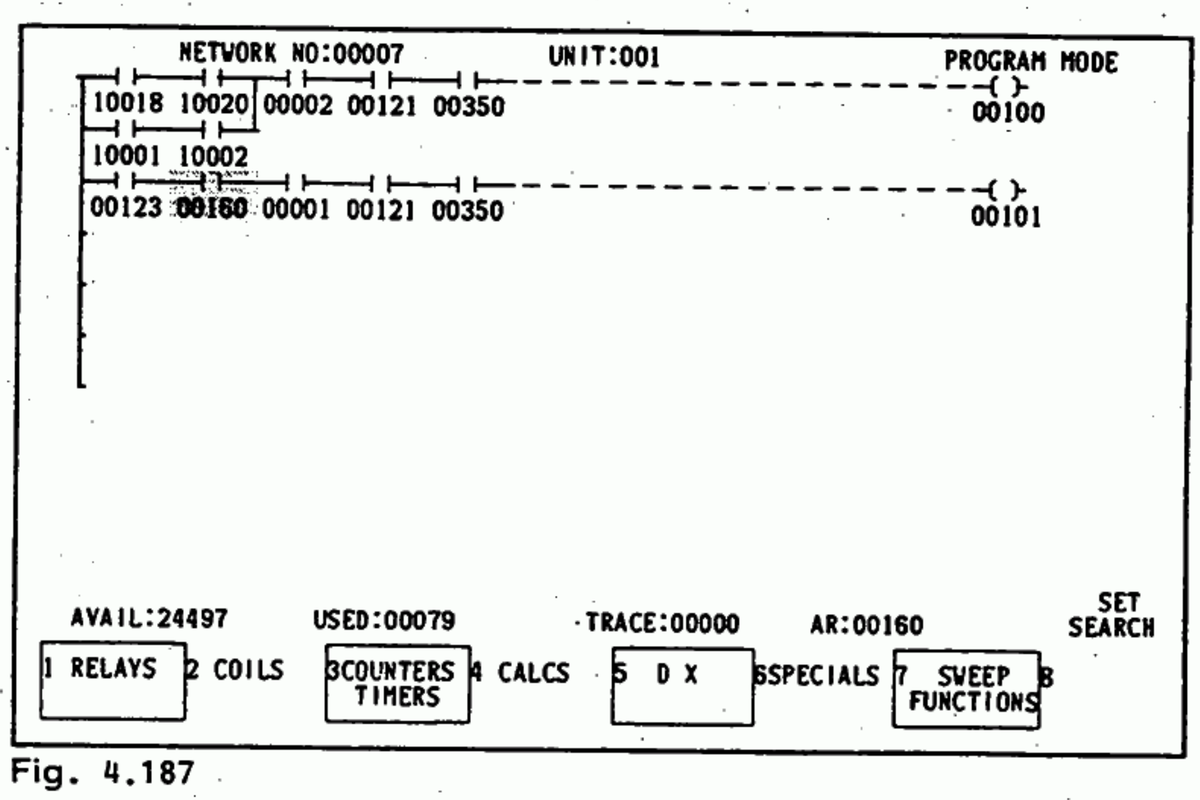


Fig. 4.187

NOTE

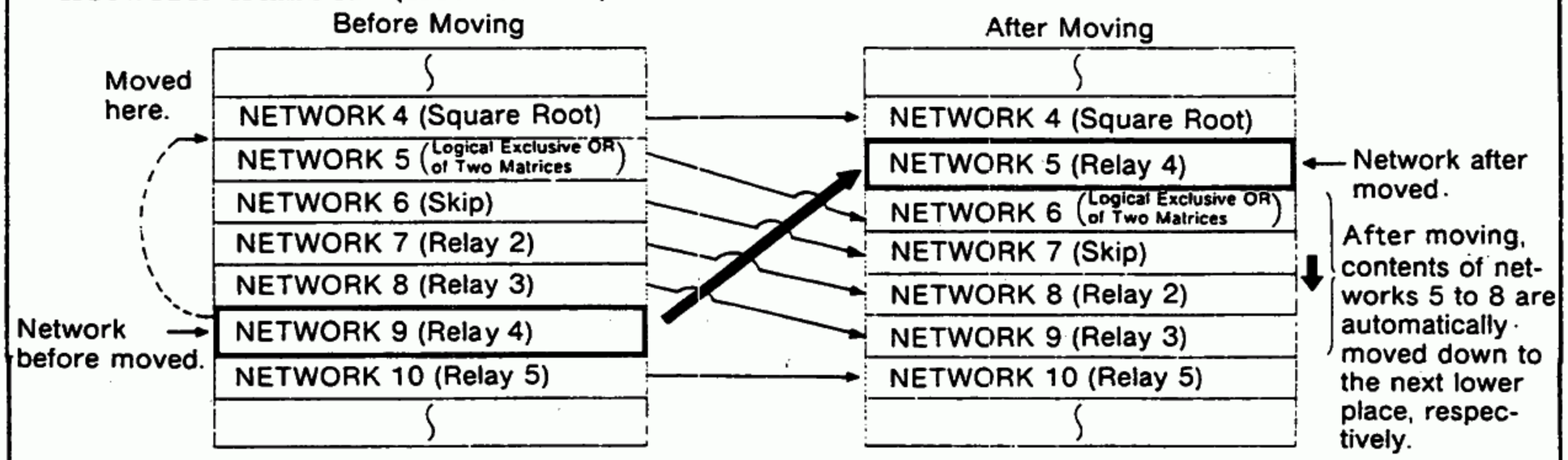
1. When ATTACH operation has already been completed, this step can be skipped.
2. Memory capacity to be used is not varied by expanding or decreasing a network in the vertical direction.
3. Depressing PRINT / CHG NODE key returns the current label display to the label display for selecting the element functions.

4.7.2 NETWORK MOVE

PROGRAM MODE

NETWORK MOVE①

Current-displayed network content (network 9) is moved to smaller network number (network 5).



POINT

- To move a network to the next to the network N, set N+1 to AR.
- The U84 must be at a standstill.

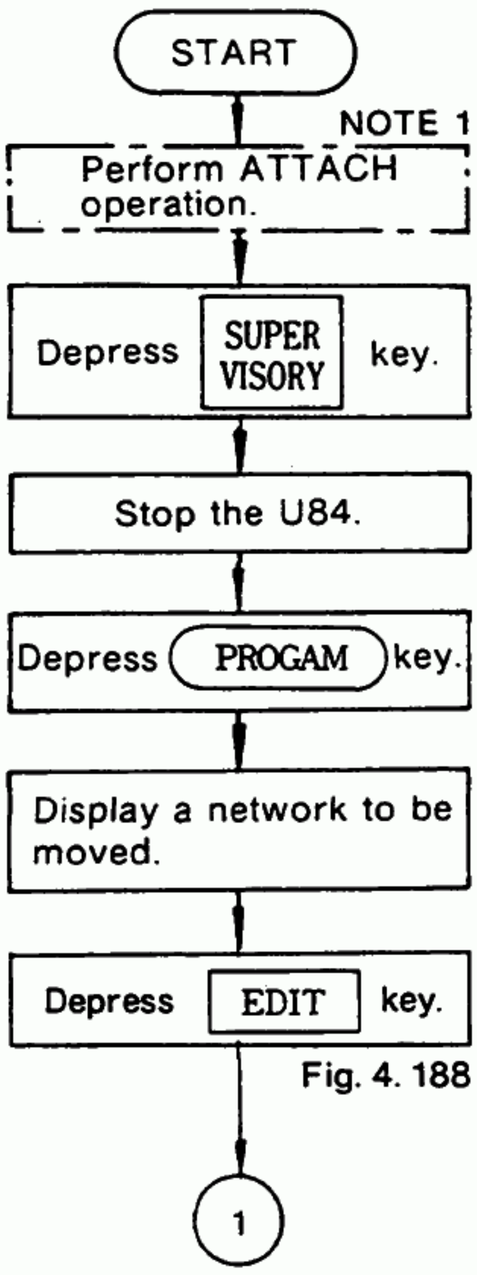


Fig. 4. 188

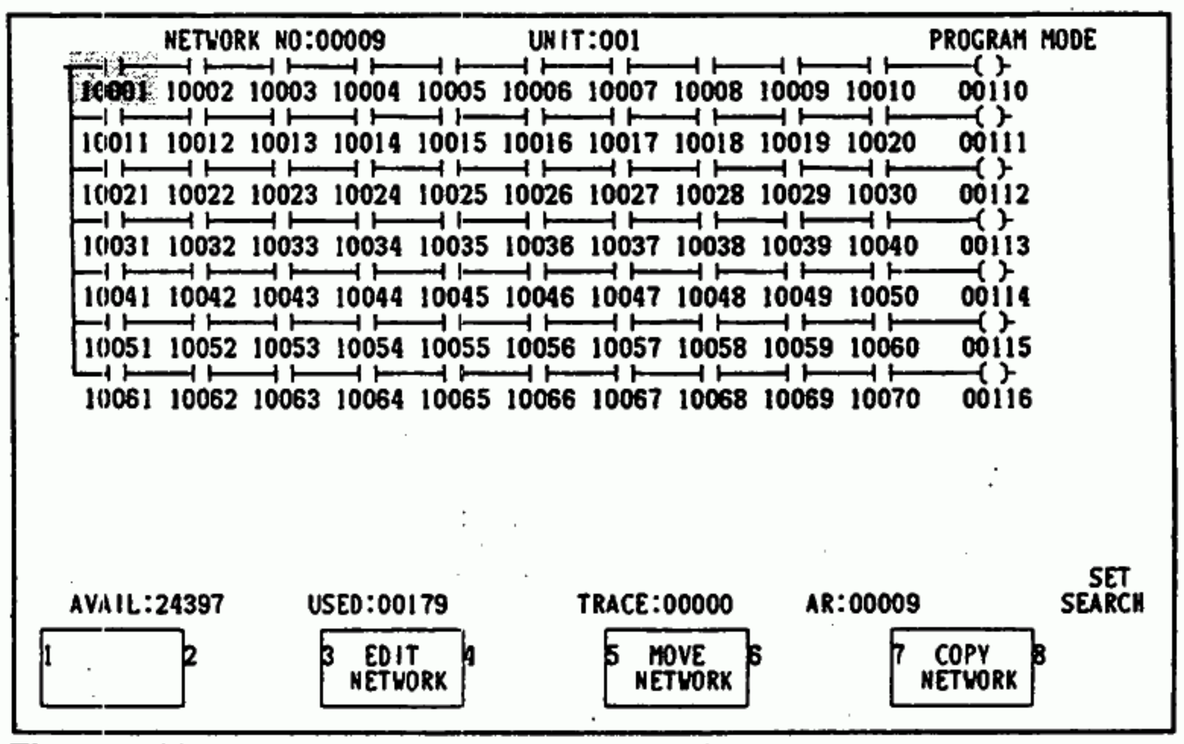
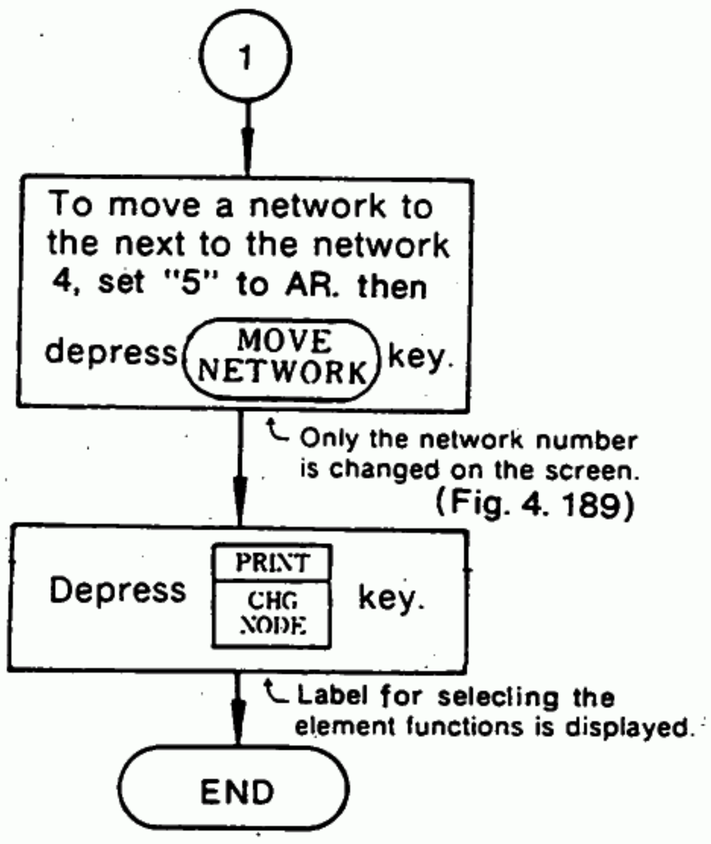


Fig. 4.188



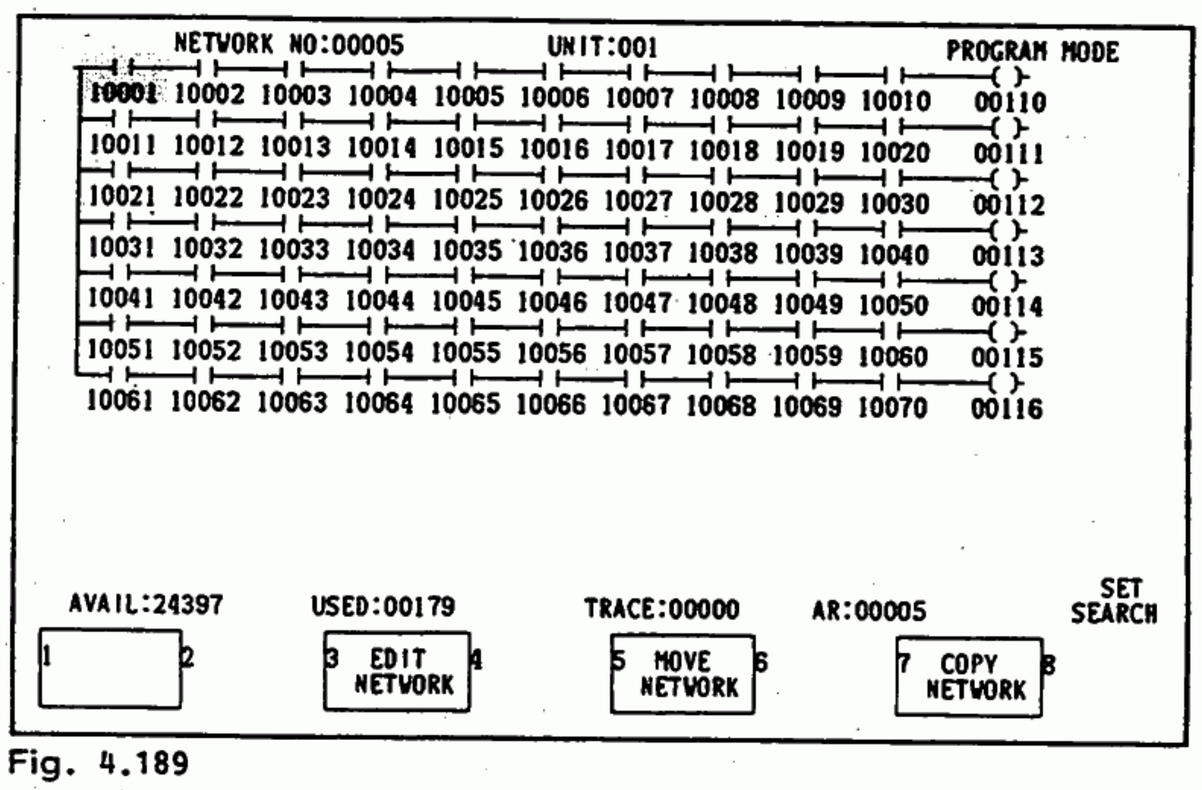


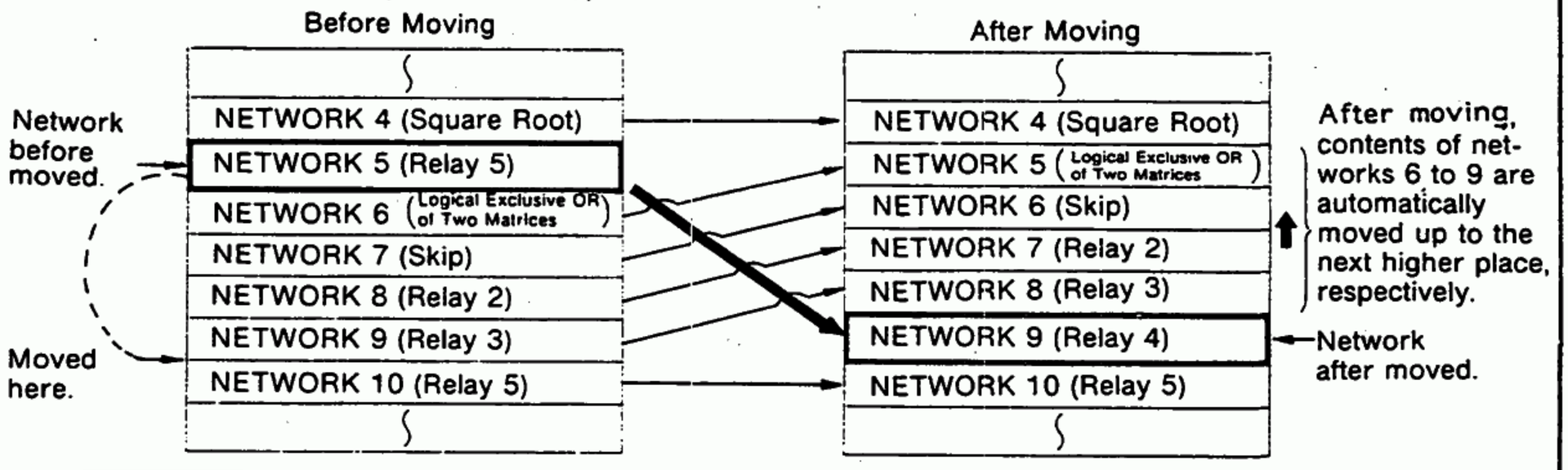
Fig. 4.189

NOTE

1. When ATTACH operation has already been completed, depress RESET / EXIT key holding SHIFT key depressed.
2. To display the label for selecting the element functions, depress PRINT / CHG NODE key without use of MOVE NETWORK key.

NETWORK MOVE ②

Current-displayed network content (network 5) is moved to larger network number (network 9).



POINT

- To move a network to the next to the network N, set N+1 to AR.
- The U84 must be at a standstill.

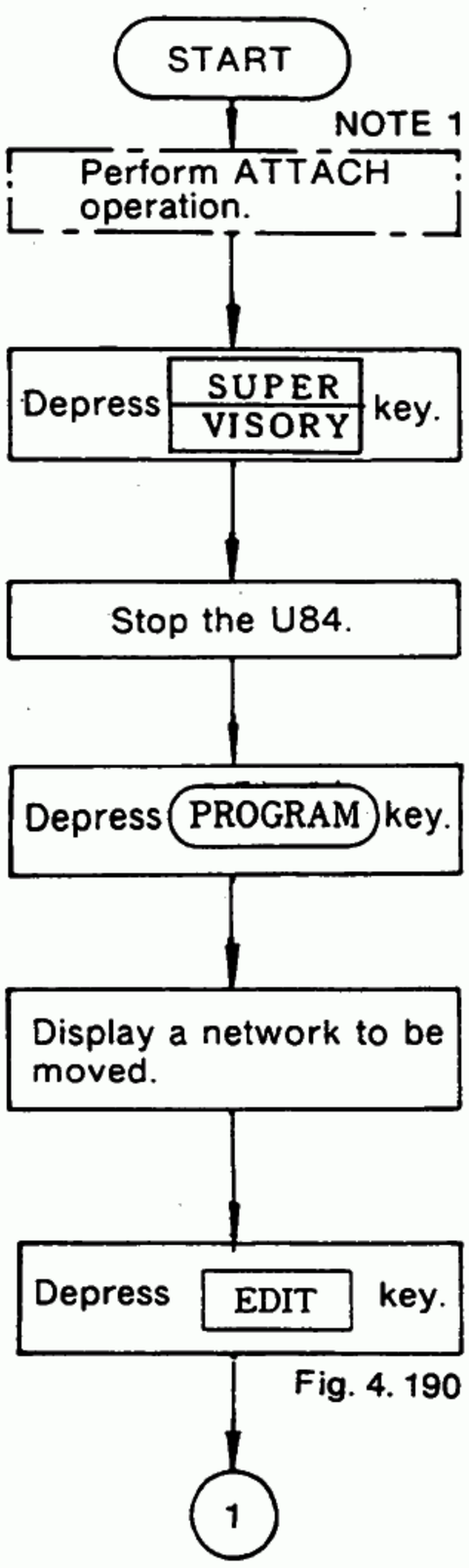


Fig. 4.190

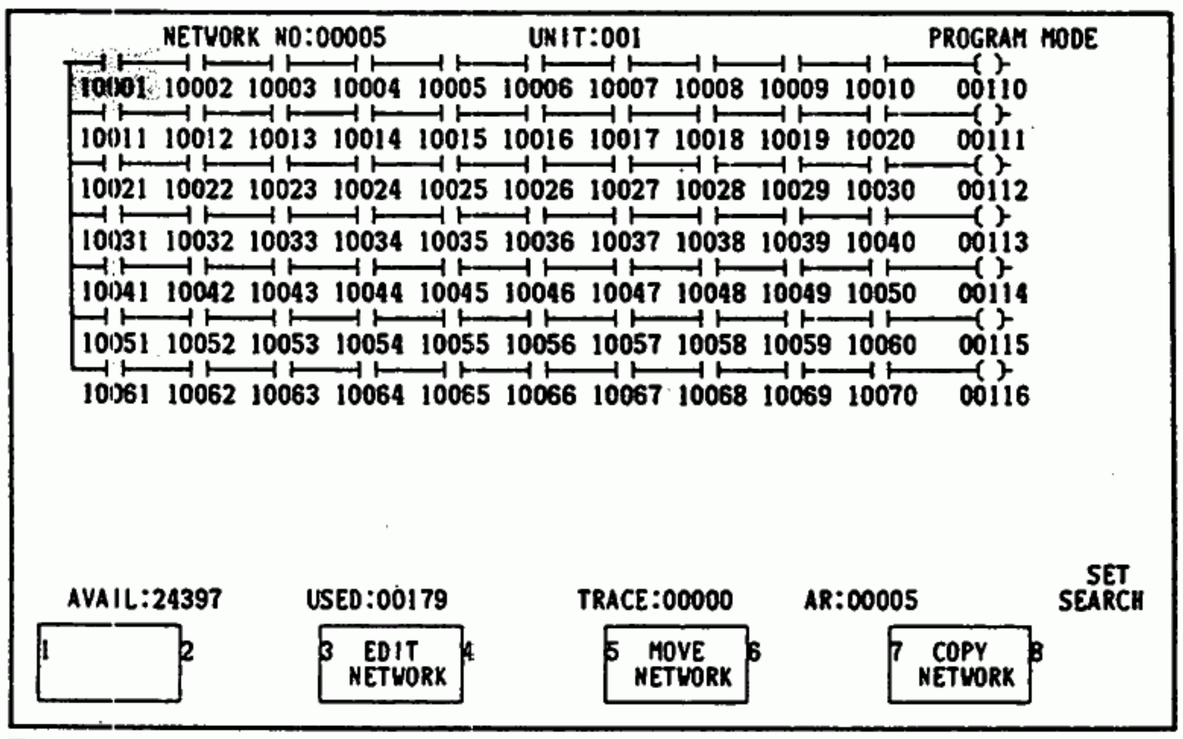
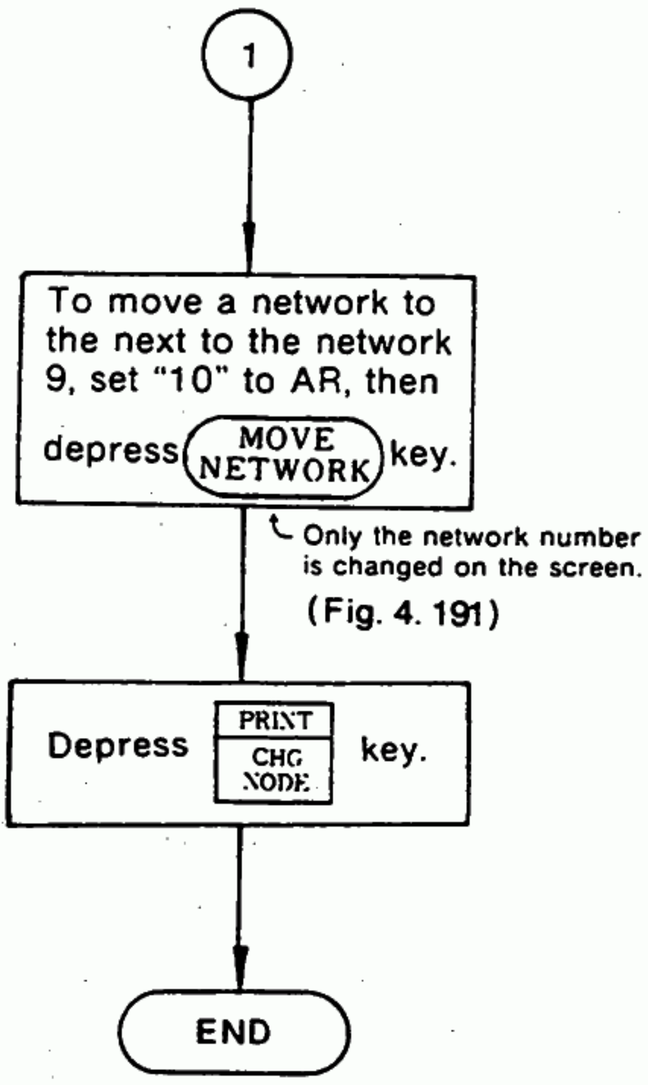


Fig. 4.190



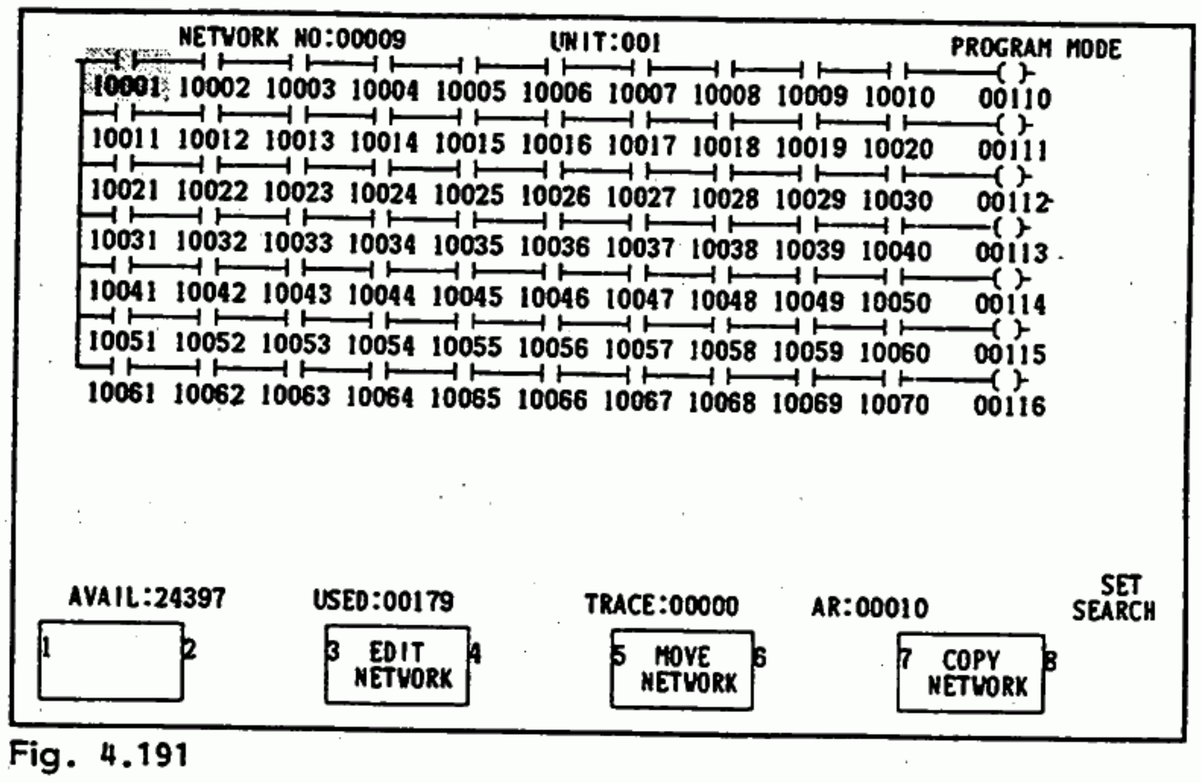


Fig. 4.191

NOTE

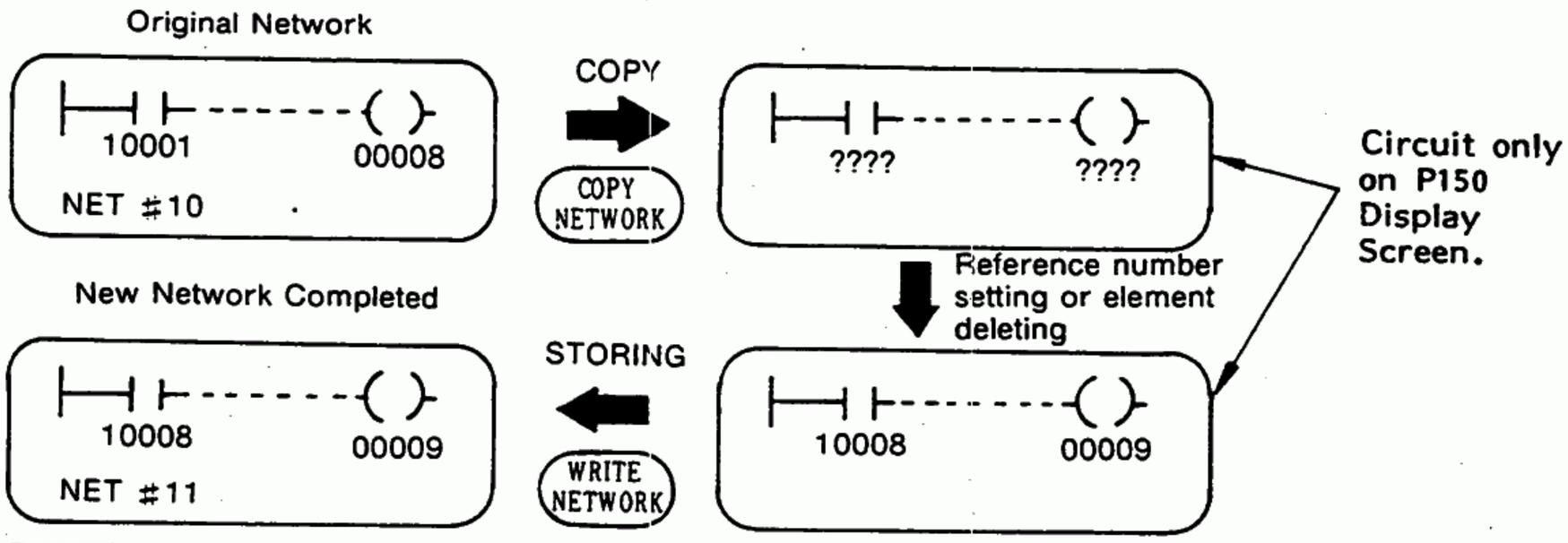
1. When ATTACH operation has already been completed, it can be skipped.
2. To display the label for selecting the element functions, depress PRINT CHG NODE key without use of MOVE NETWORK key.

4.7.3 NETWORK COPY

PROGRAM MODE

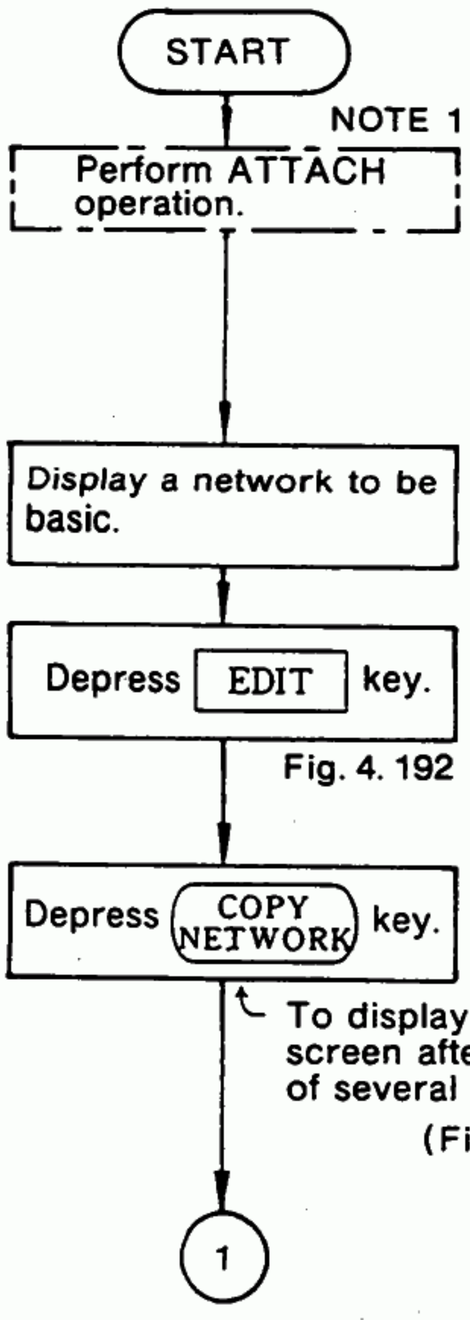
NETWORK COPY

The network copy function is used to create a network of a similar circuit pattern based on the network written in the U84 memory.



POINT

- A network only on P150 display screen is written in the U84 memory simply by depressing (WRITE NETWORK) key.
- Where adding elements, use the stored network, but not a copied network.
- If a new network is stored in the network N, each network number following the current network N is increased by +1.



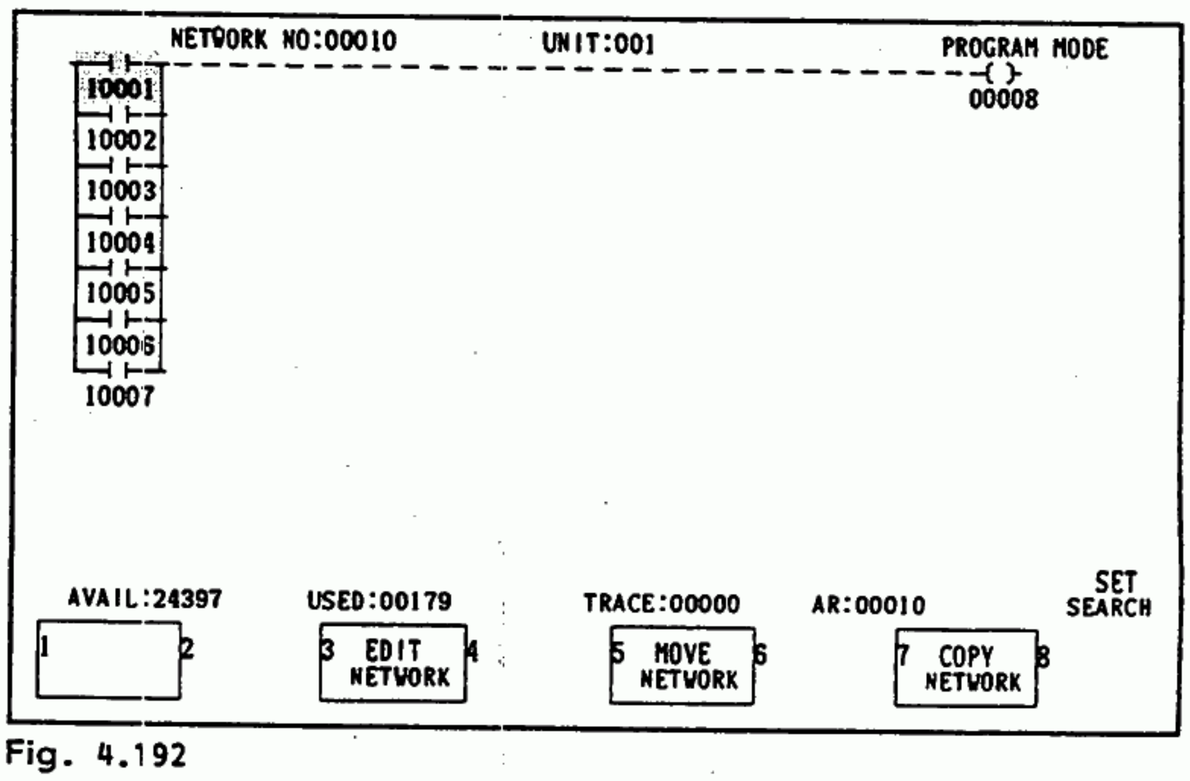


Fig. 4.192

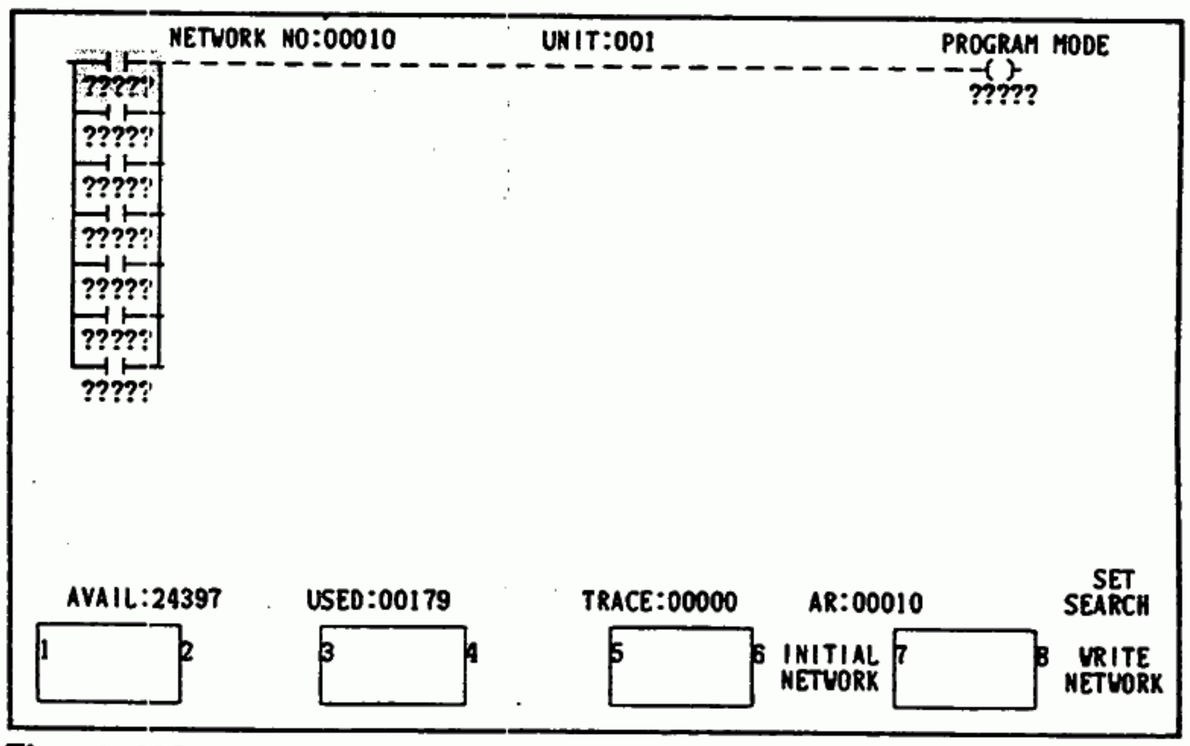


Fig. 4.193

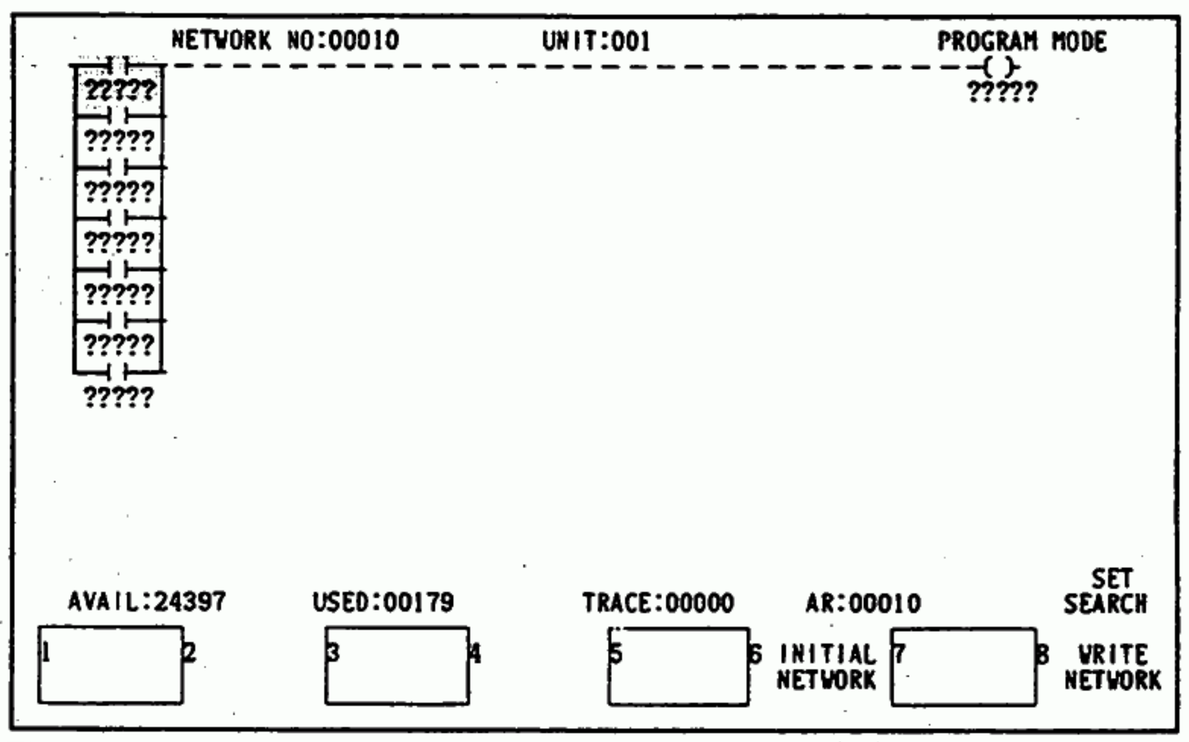


Fig. 4.194

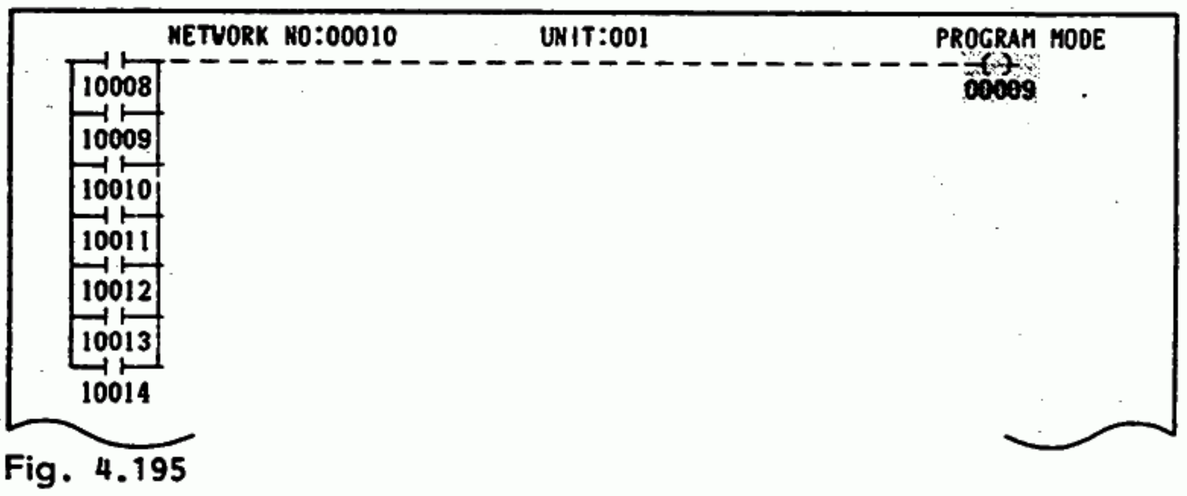


Fig. 4.195

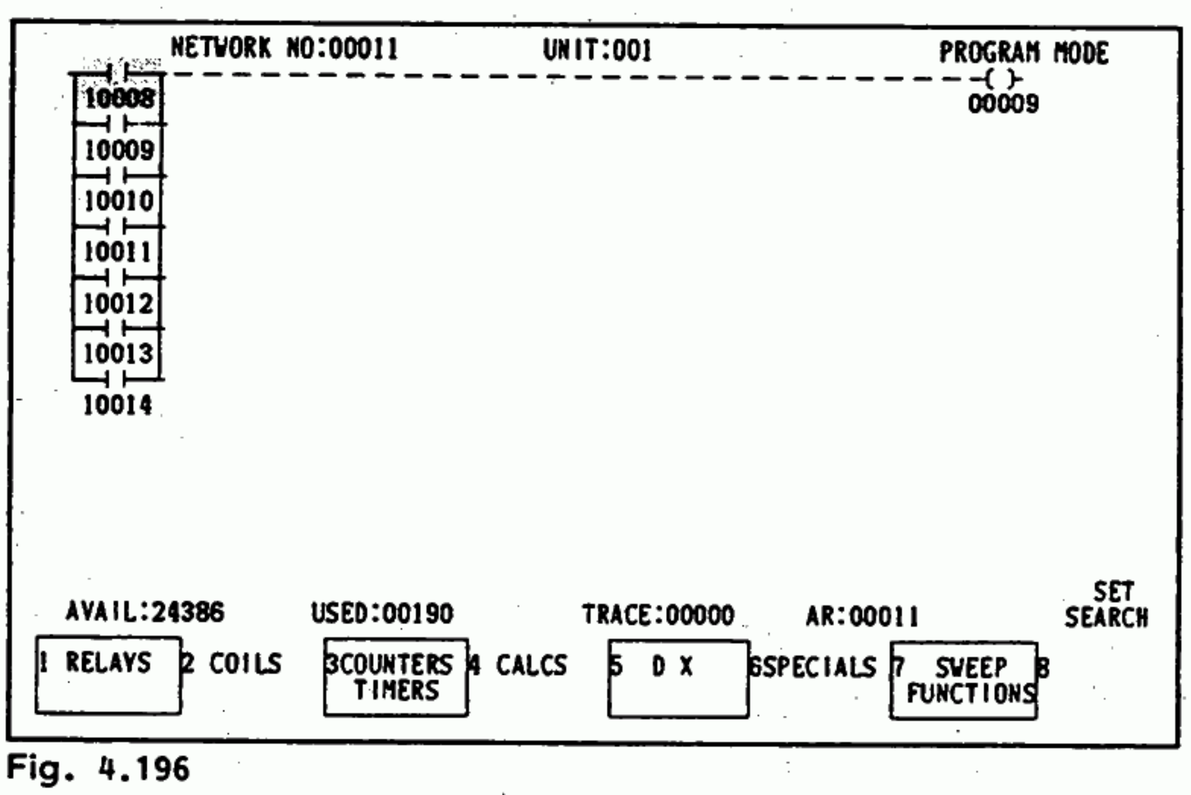


Fig. 4.196

1

1. Set a reference number to AR.
2. Place the cursor at a position where the reference number is to be set.
3. Depress [ENTER] key.
4. Repeat the same procedures described above to place the reference number completely in the all "????" positions.

If returning to a copied screen (with all references displayed by "????") is required, depress (INITIAL NETWORK) key.

Fig. 4.194

1. Set the specified reference number to AR.
2. Place the cursor at a position where the reference number is to be set.
3. Depress [ENTER] key.
4. Repeat the same procedures described above to place the reference number completely in the all "????" position.

Fig. 4.195

Set a network number for storing a new network contents to AR, then depress (WRITE NETWORK) key.

To display the specified network contents after a lapse of several seconds (with it already stored in the U84 memory). (Fig. 4.196)

END

NOTE

1. When ATTACH operation has already been completed, this step can be skipped.
2. To return the copied screen to the original screen with no using (WRITE NETWORK) key, depress [EDIT] key, then [PRINT / CHG NODE] key.
3. The network is stored in the U84 by depressing (WRITE NETWORK) key.

   However, if the U84 memory capacity for storing the networks is out of memory, storing operation is not activated and the error message "MEMORY FULL" is displayed.

4. 8 FILE MANAGEMENT OPERATION

The file control is used for operation of data disk files (user files), disk formating and P150 communication parameter settings, as listed below:

FILE CONTROL

- Directory: File names are displayed.
- File deleting: Unnecessary files are deleted.
- File renaming: File names are altered.
- File formatting: New disks are formatted (initialized).
- Disk checking: Disk status is checked.
- File copying: From the disk inserted in drive B, specified files or all the files are copied onto the disk inserted in drive A.
- Port parameter setting: The communication parameters for PORT 1 and PORT 2 of P150 are set.

These operations can be executed with P150 alone (off-line).

POINT

Before starting operation, insert the correct disks as instructed by the display in drives A and B.

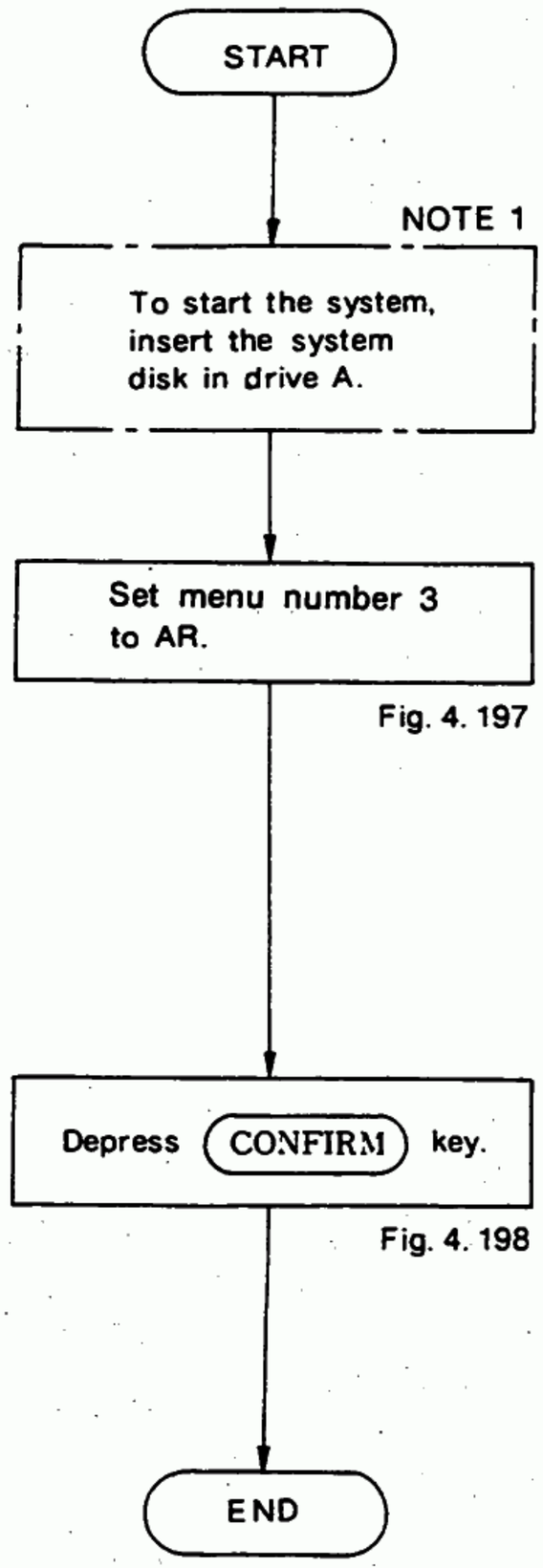


Fig. 4.197

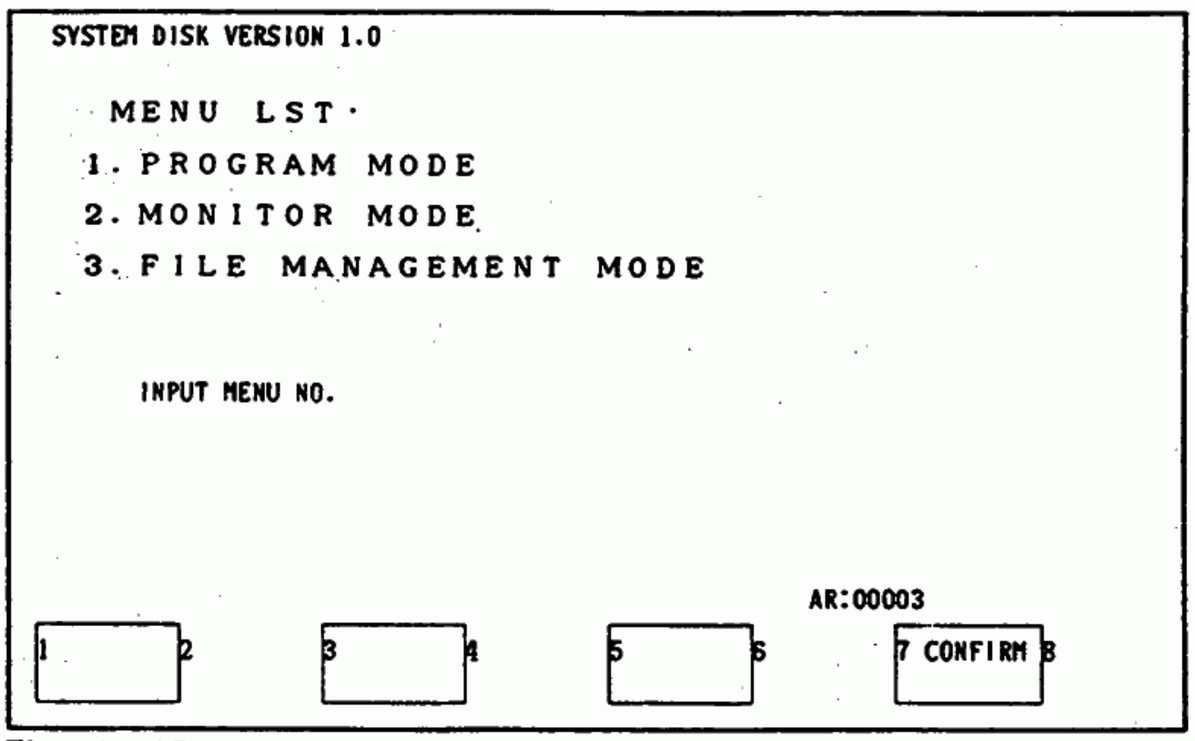


Fig. 4.197

Fig. 4.198

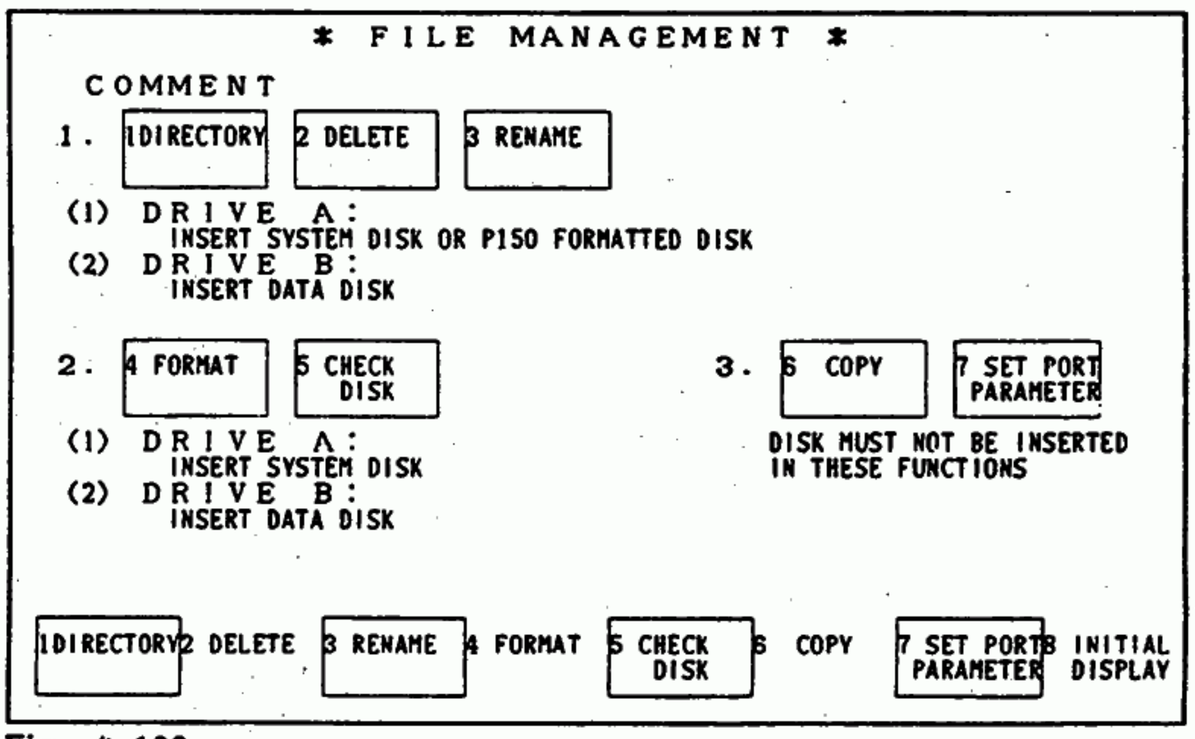


Fig. 4.198

NOTE

1. When ATTACH operation has already been completed, depress SUPER VISORY key and then depress INITIAL DISPLAY key, or depress SHIFT and SUPER VISORY keys simultaneously to return the operation menu display.
2. Depressing INITIAL DISPLAY key shown in Fig. 4.198 also calls up the operation menu display.

4.8.1 P150 PORT PARAMETERS

PROGRAM MODE

(1) PORT PARAMETER SETTING

When the P150 serial port (RS-232C) is used, port parameters must be set in the port (1 or 2) to connect U84 by the following steps.

1. Select port (1 or 2) to connect U84.
2. Set port parameters to the selected port.
3. Connect the U84 to the port.
4. Use the other port for serial printer (for future use).

When the printer (PC-PR101F or PC-PR201F) is used, it is connected to parallel port (CENTRONICS) by only setting printer.

POINT

- If the U84 is connected to PORT 1, and its port parameters to be set are the same as those set before shipping, port parameter setting is not required.
- Parallel port has already been set before shipping to connect printer.

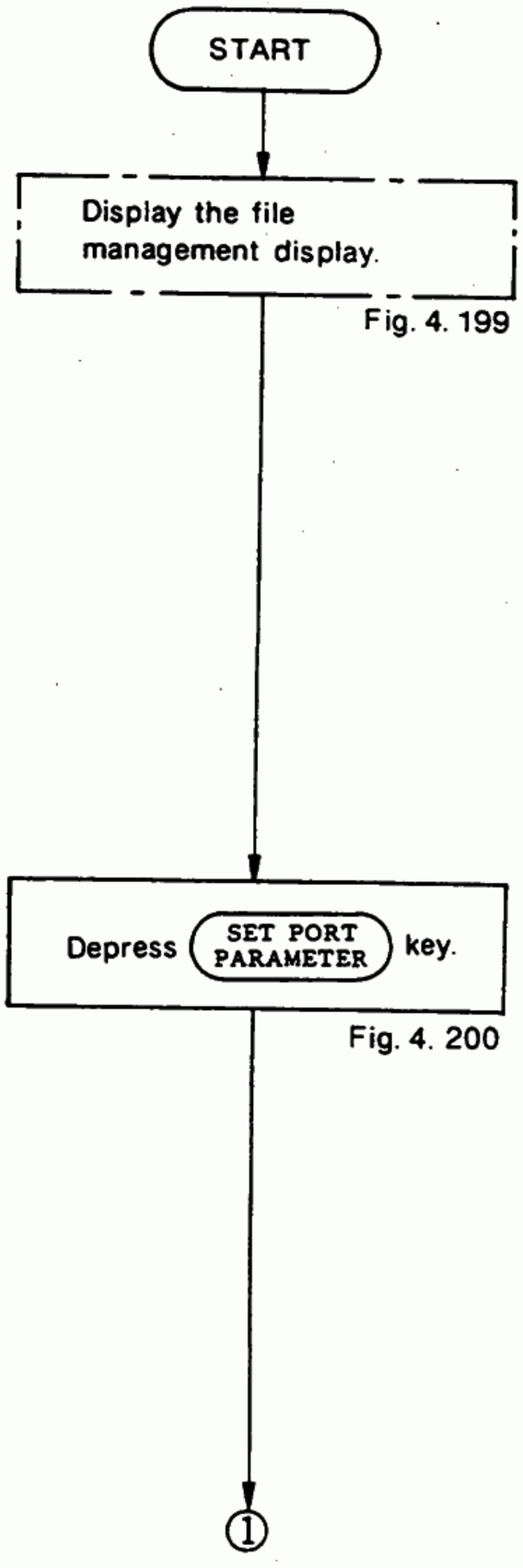


Fig. 4. 199

Fig. 4. 200

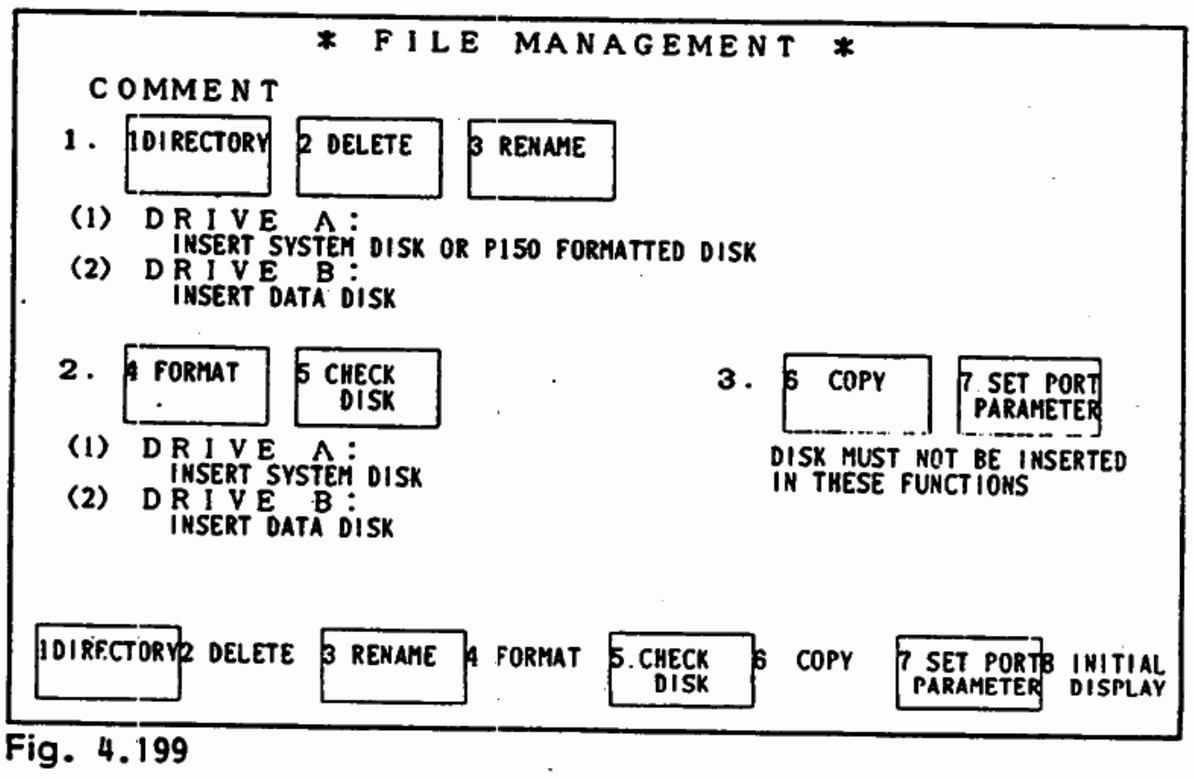


Fig. 4.199

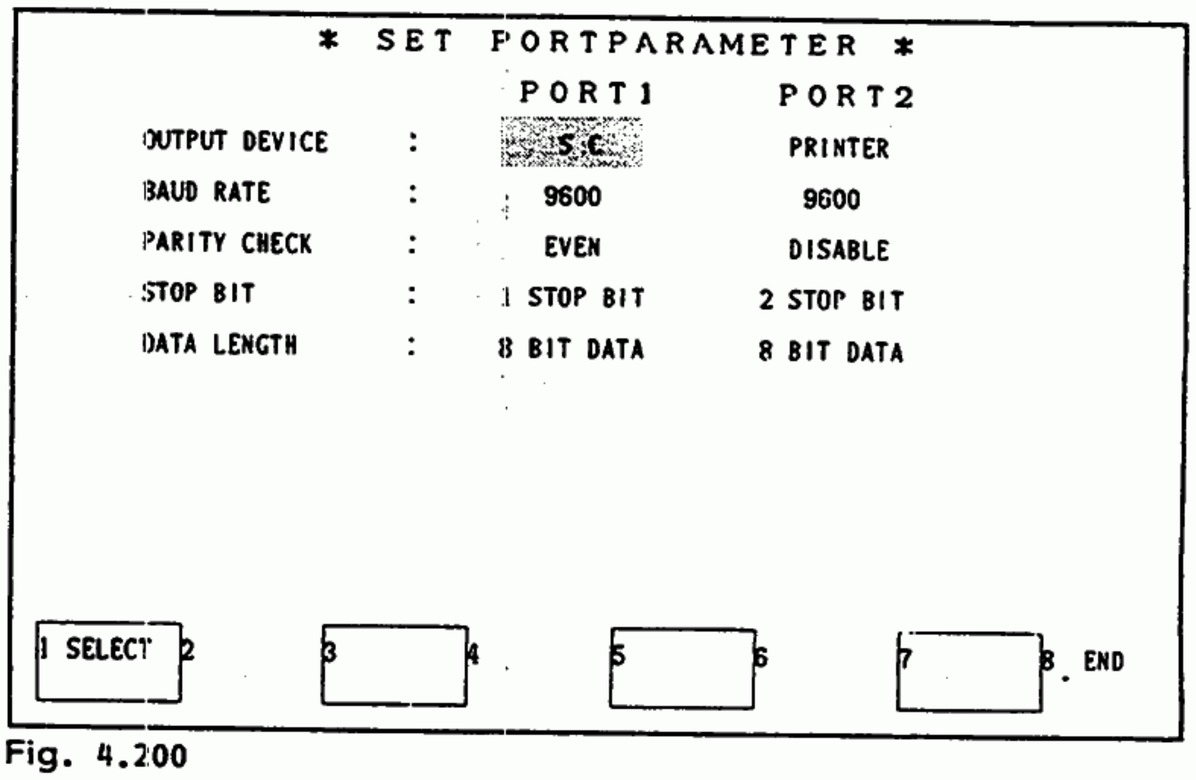
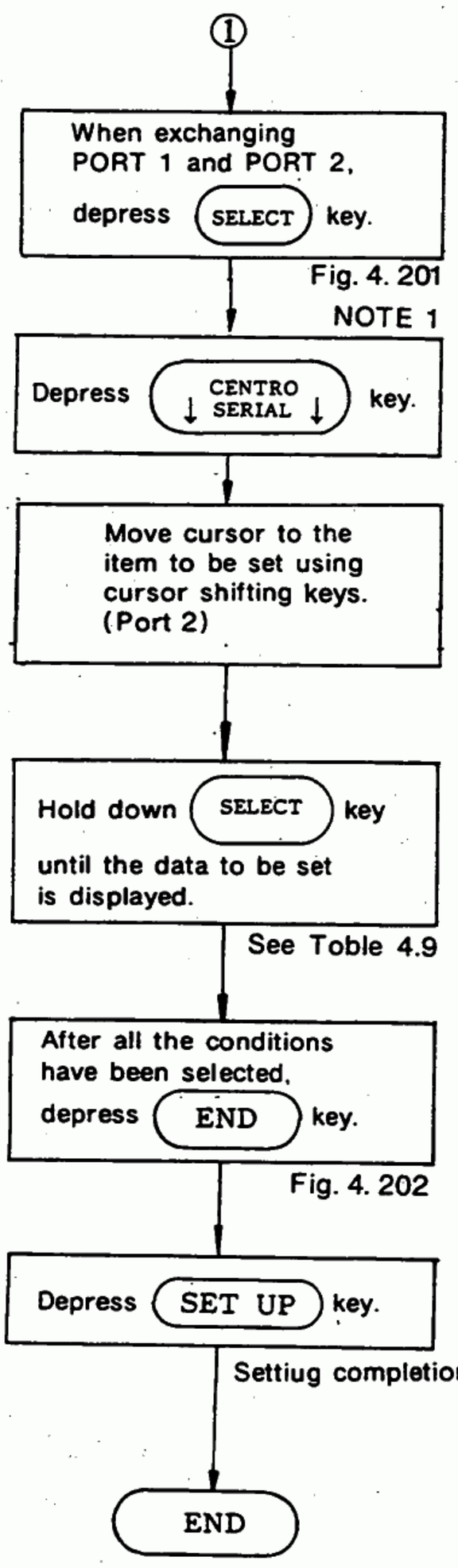


Fig. 4.200



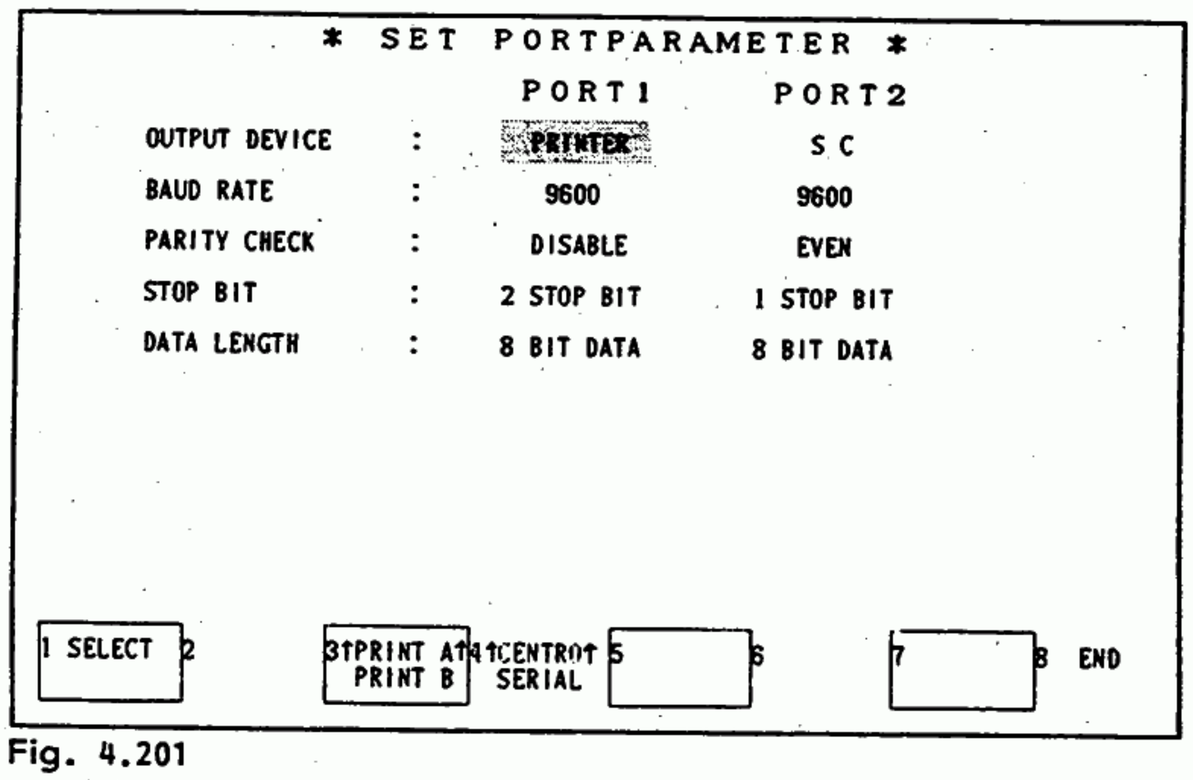


Fig. 4.201

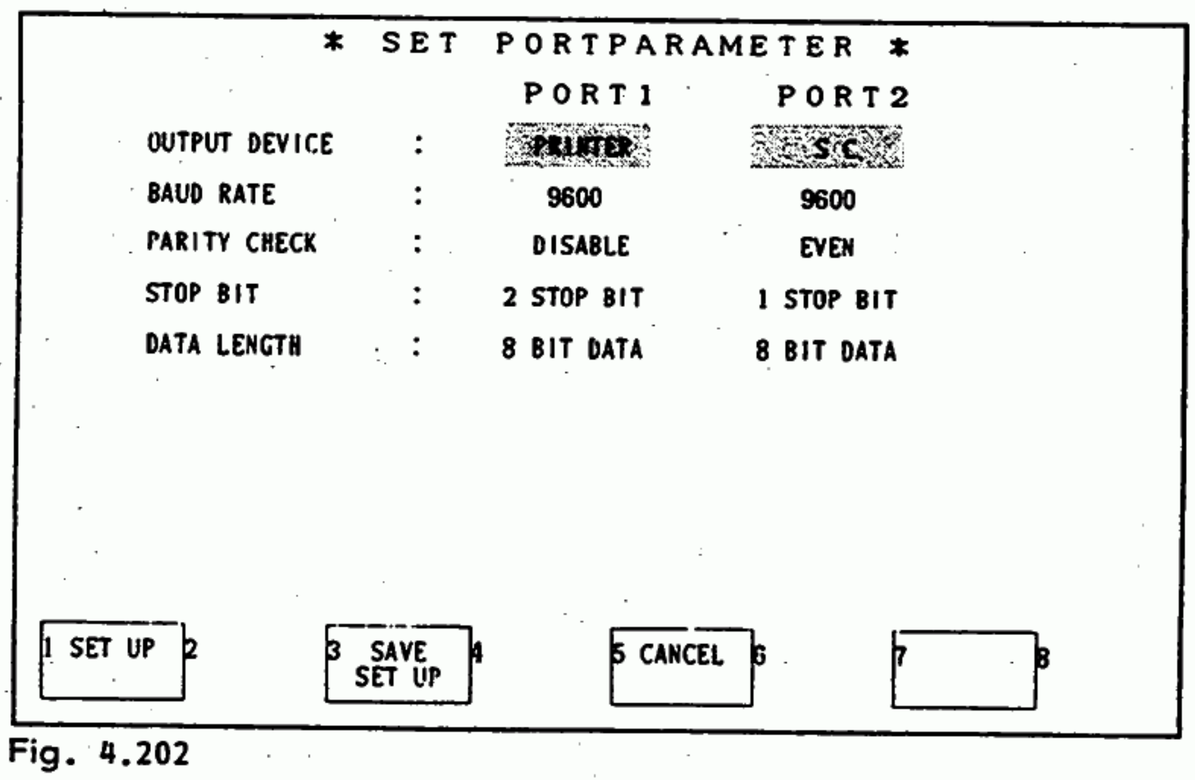


Fig. 4.202

NOTE

1. When (↑CENTRO↑ SERIAL) label has already been displayed, (↑CENTRO↑ SERIAL) key should not be depressed.

2. P150 has a communication parameter file in the system disk, the default values (initial values) shown in Fig. 4.200. By copying all modifications of these initial values on the system disk, the need to alter the communication parameters at system starting is eliminated. Depress (SAVE SET UP) key instead of (SET UP) key (Fig. 4.202). After the display shown in Fig. 4.203 appears, insert the system disk with writable state in drive A, and depress (CONFIRM) key.

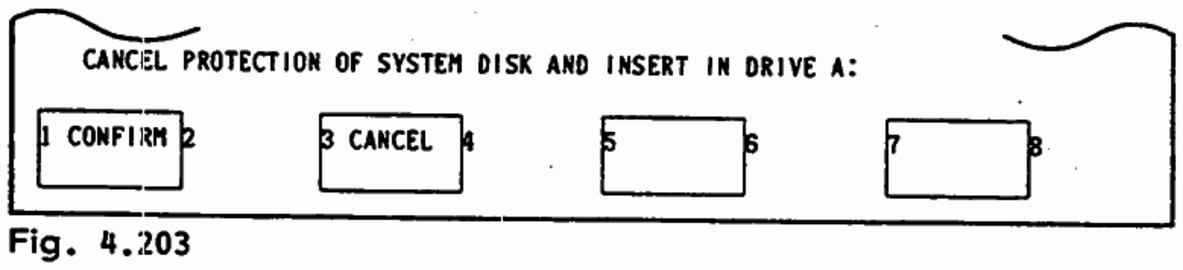


Fig. 4.203

IMPORTANT

Be sure to make the system disk to the write disable state after executing (SAVE SET UP) key.

Table 4.9 Change of Setting Value at (SELECT) key Depression

Item	Setting Value
OUTPUT DEVICE	→ SC → PRINTER →
BAUD RATE	→ 75 → 110 → 150 → 300 → 600 → 1200 ← 2400 ← 4800 ← 9600 ← 19200 ←
PARITY CHECK	→ DISABLE → ODD → EVEN →
STOP BIT	→ 1 STOP BIT → 2 STOP BIT →
DATA LENGTH	→ 7 BIT DATA → 8 BIT DATA →

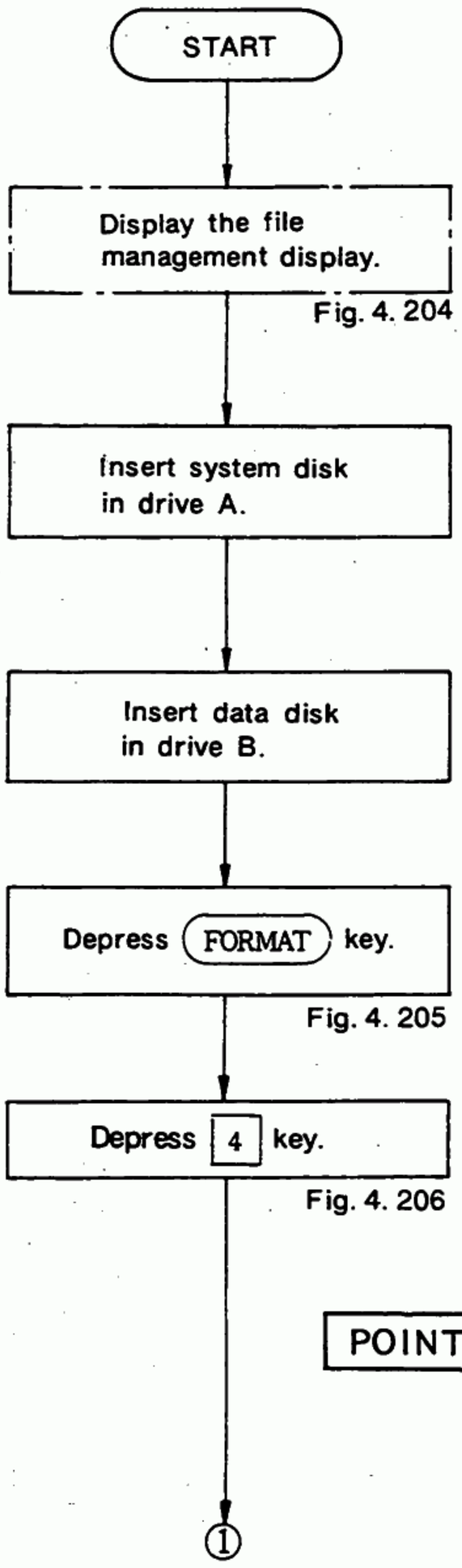
4.8.2 DISK OPERATION

(1) DISK FORMATTING

The disks are formatted by this procedure. Through this operation disks become usable with P150.

POINT

- Blank disks (model F150-000) are delivered in the formatted state. This operation is not required.
- When disks purchased on the market are used, format the disks with writable state before using.



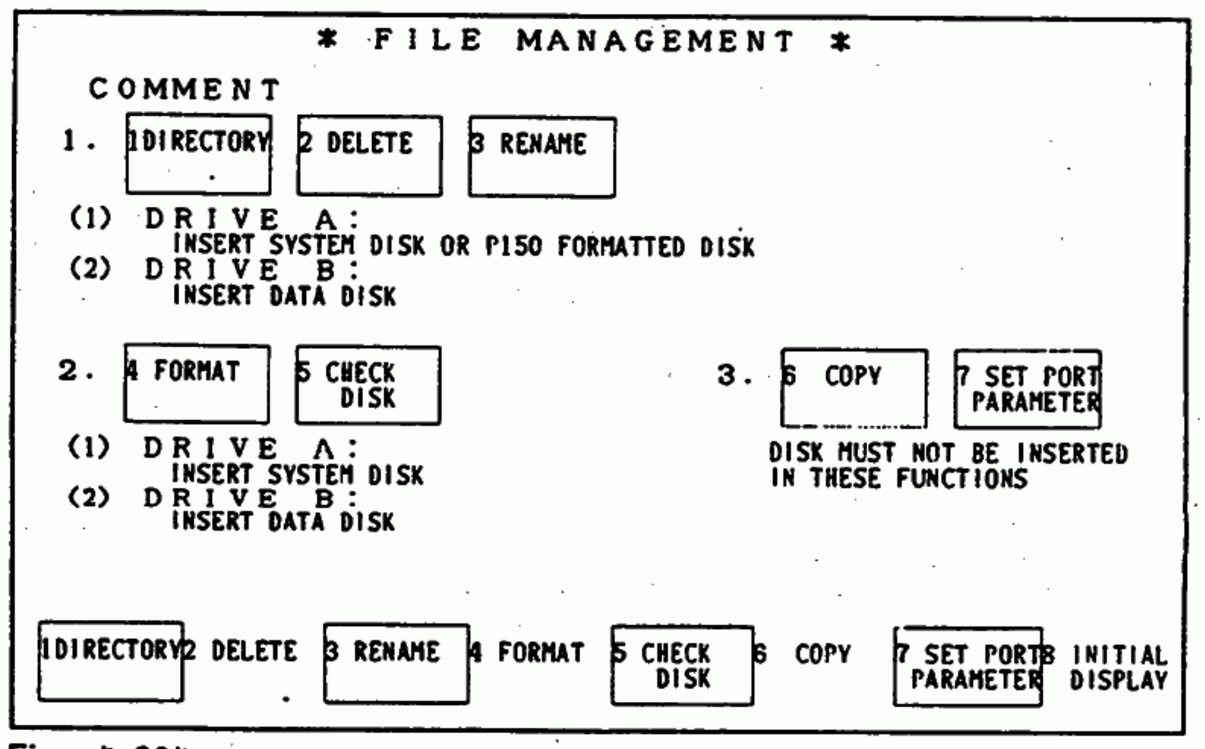


Fig. 4.204

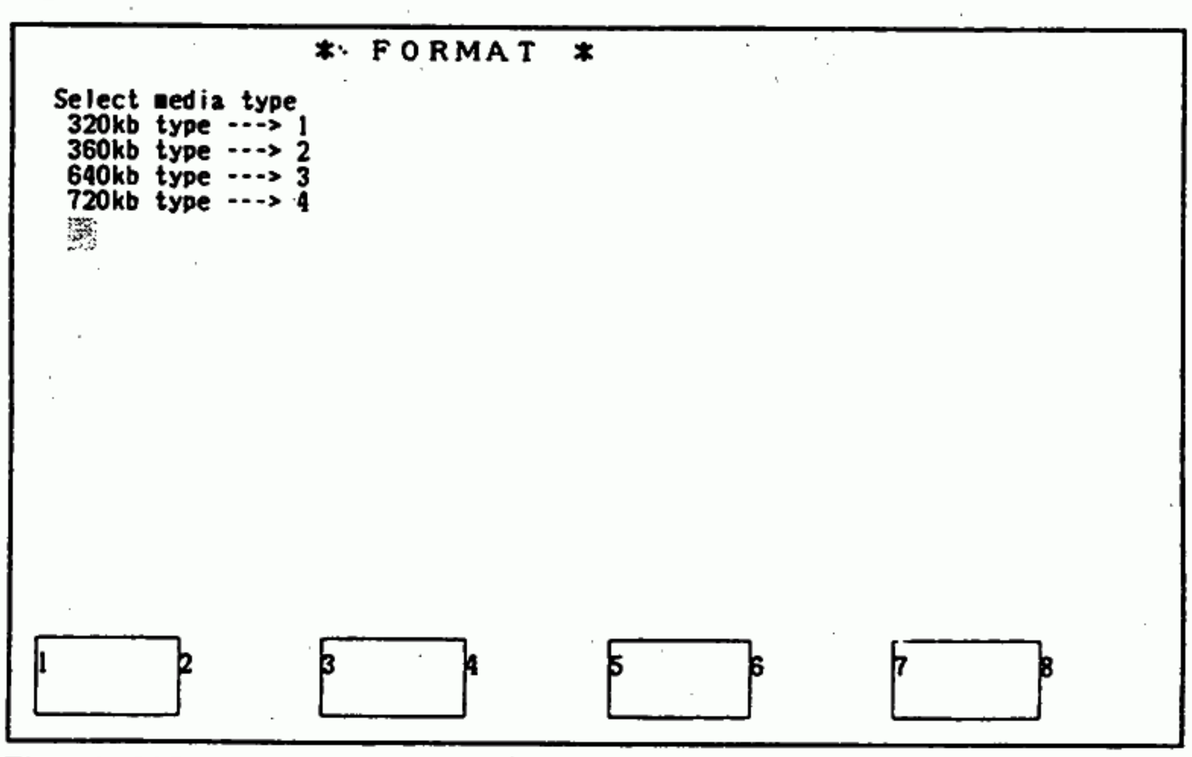


Fig. 4.205

POINT

- For media type, four types (320 to 720 k bytes) can be selected. Usually, select 720 k bytes type.

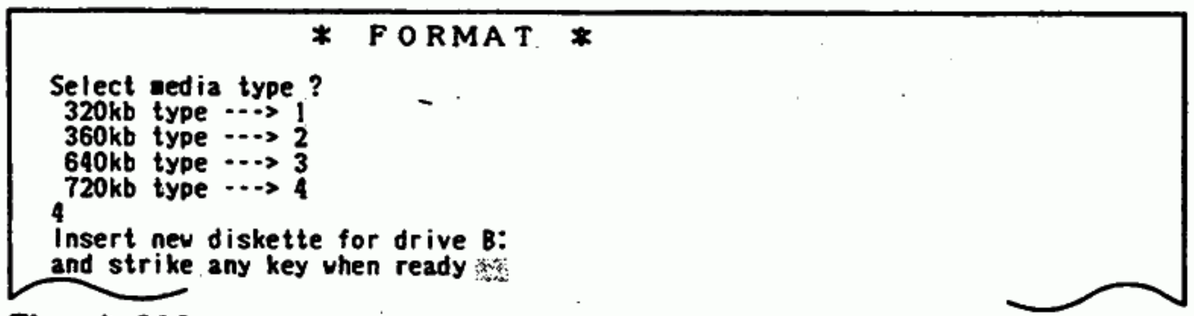


Fig. 4.206

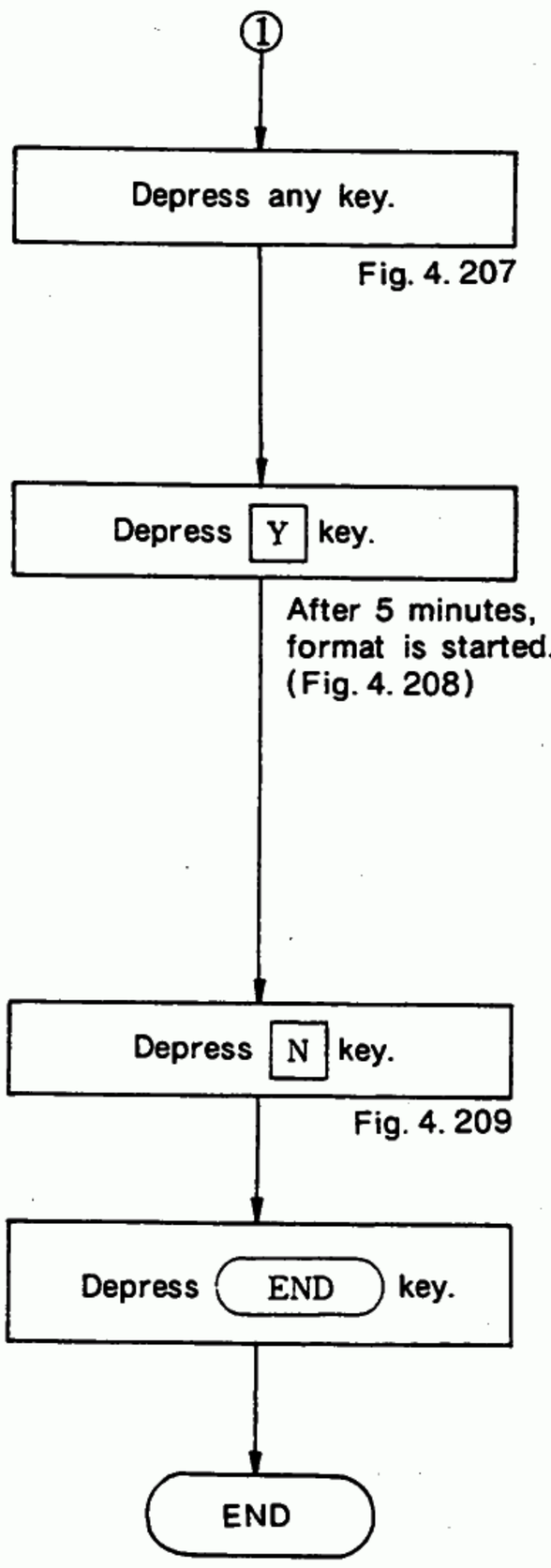


Fig. 4. 207

Fig. 4. 209

```
                    *  FORMAT  *

Select media type ?
 320kb type ---> 1
 360kb type ---> 2
 640kb type ---> 3
 720kb type ---> 4
4
Insert new diskette for drive B:
and strike any key when ready


All data in disk of drive B: are cleared,Are you sure <Y/N>?
```

Fig. 4.207

```
                    *  FORMAT  *

Select media type ?
 320kb type ---> 1
 360kb type ---> 2
 640kb type ---> 3
 720kb type ---> 4
4
Insert new diskette for drive B:
and strike any key when ready


All data in disk of drive B: are cleared,Are you sure <Y/N>? y

Formatting...
```

Fig. 4.208

```
                    *  FORMAT  *

Select media type ?
 320kb type ---> 1
 360kb type ---> 2
 640kb type ---> 3
 720kb type ---> 4
4
Insert new diskette for drive B:
and strike any key when ready


All data in disk of drive B: are cleared,Are you sure <Y/N>? y

Formatting... System transferred

 730112 bytes total disk space
  61440 bytes used by system
 668672 bytes available on disk

Format another <Y/N>? n

 1   2    3   4    5   6    7   8  END
```

Fig. 4.209

NOTE

1. Depressing [N] key in the display of Fig. 4.208 displays (END) label.
   Depressing (END) key returns the display shown in Fig. 4.204.

2. The disk formatted by P150 contains a file "COMMAND•COM."
   This disk can be used in place of the system disk in the file operation.

IMPORTANT

When disks are formatted, all the contained data are deleted. To empty formatted disks, use the file deletion function.

(2) DISK CHECKING

This function is for checking inconsistant or incorrect disk usage and records. The use of this function is recommended to check the directory and the disk residual capacity.

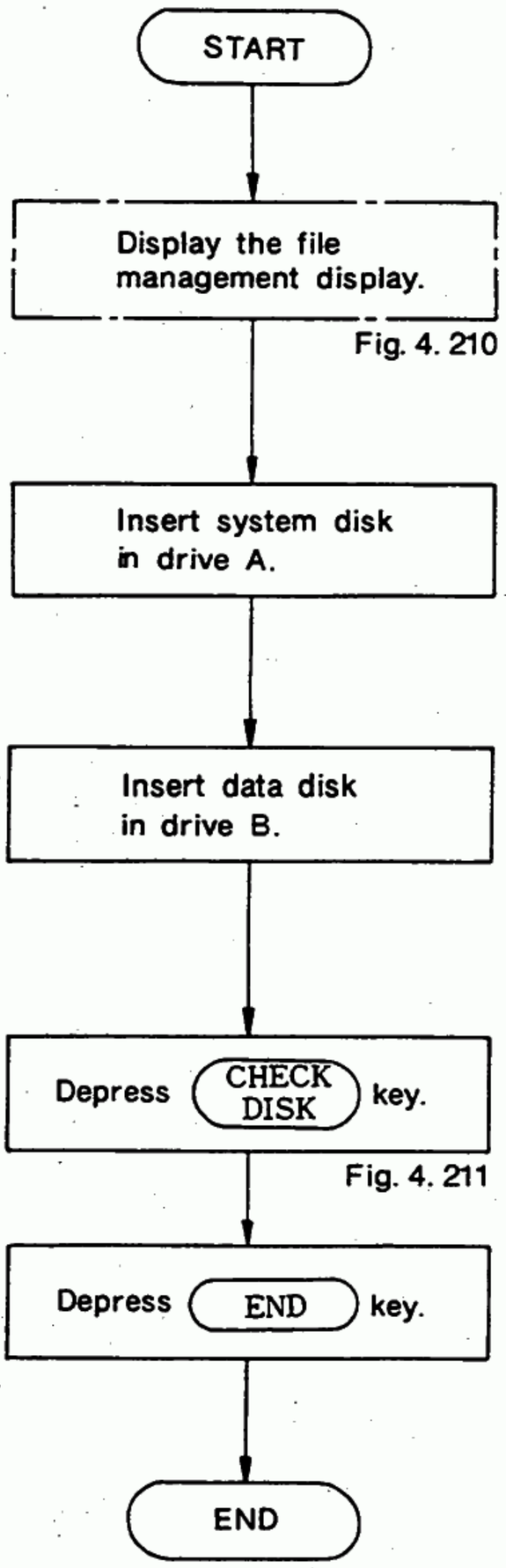


Fig. 4.210

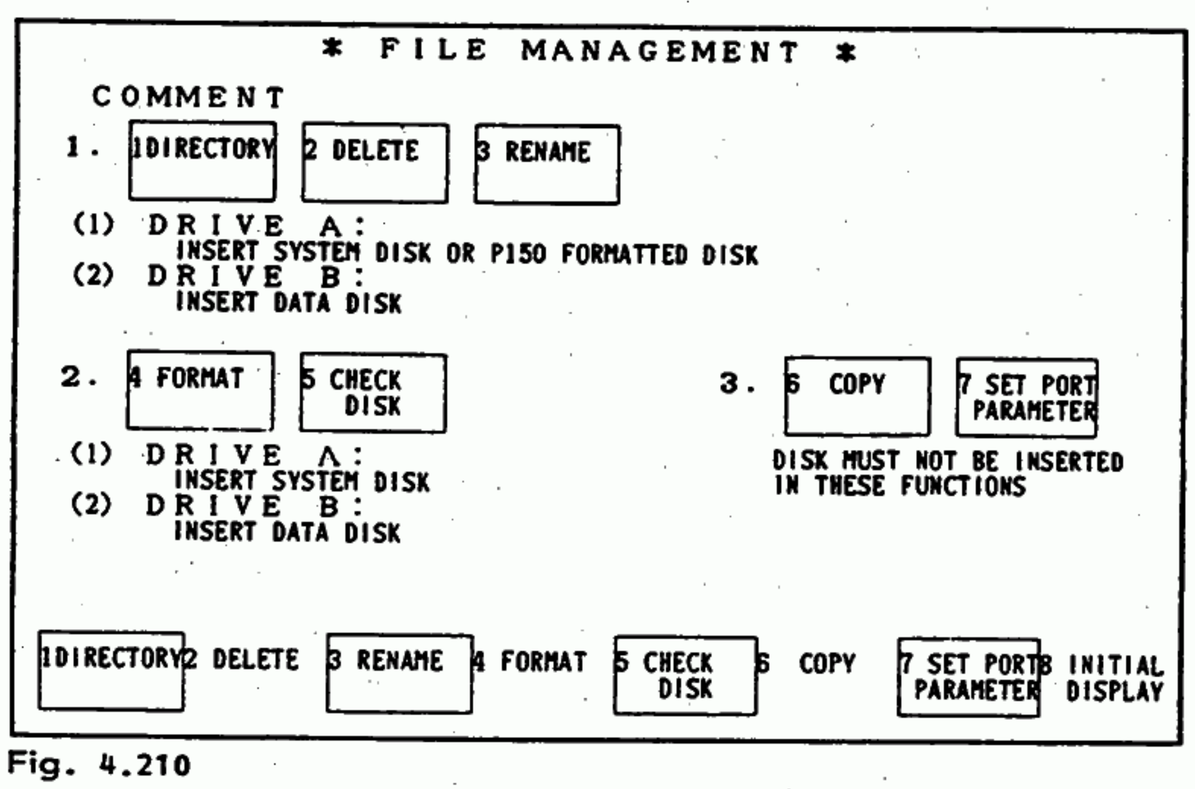


Fig. 4.210

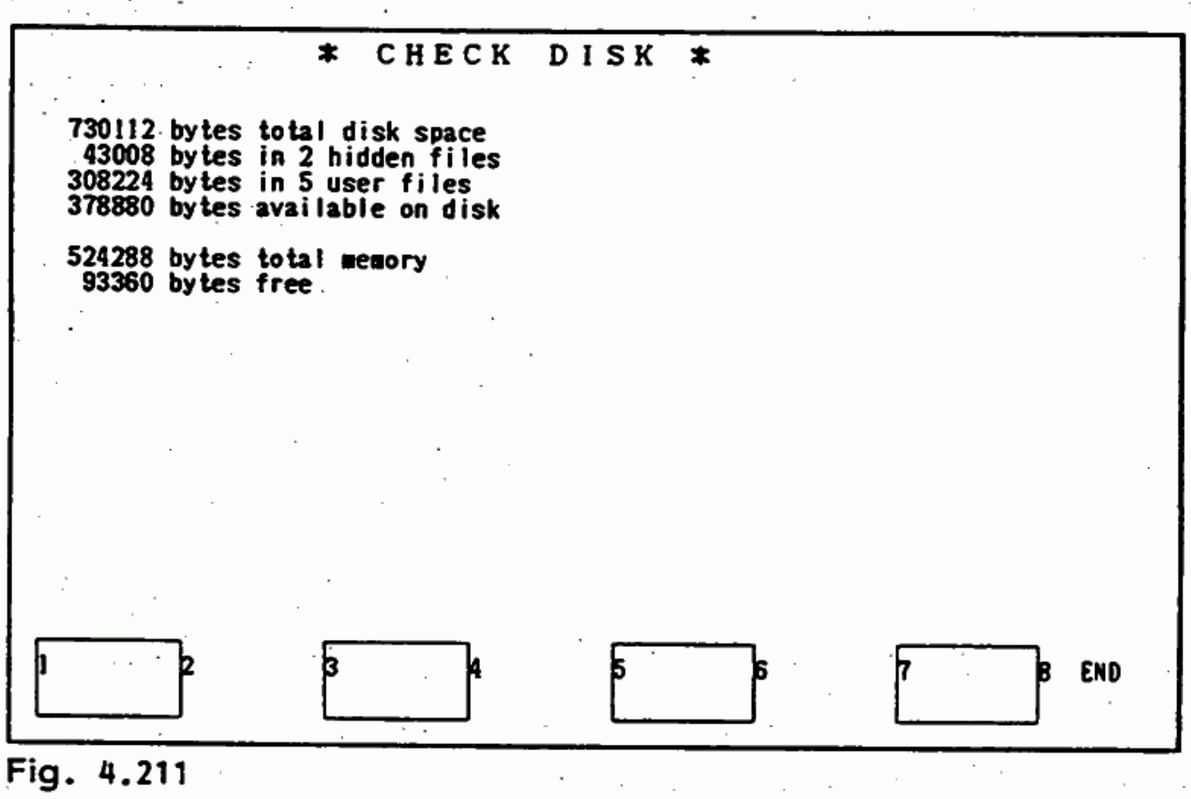


Fig. 4.211

4.8.3 FILE OPERATION

(1) DIRECTORY

Data disk directory information contains by this operation. The directory is recorded file names, sizes, and the data of creation and updating.

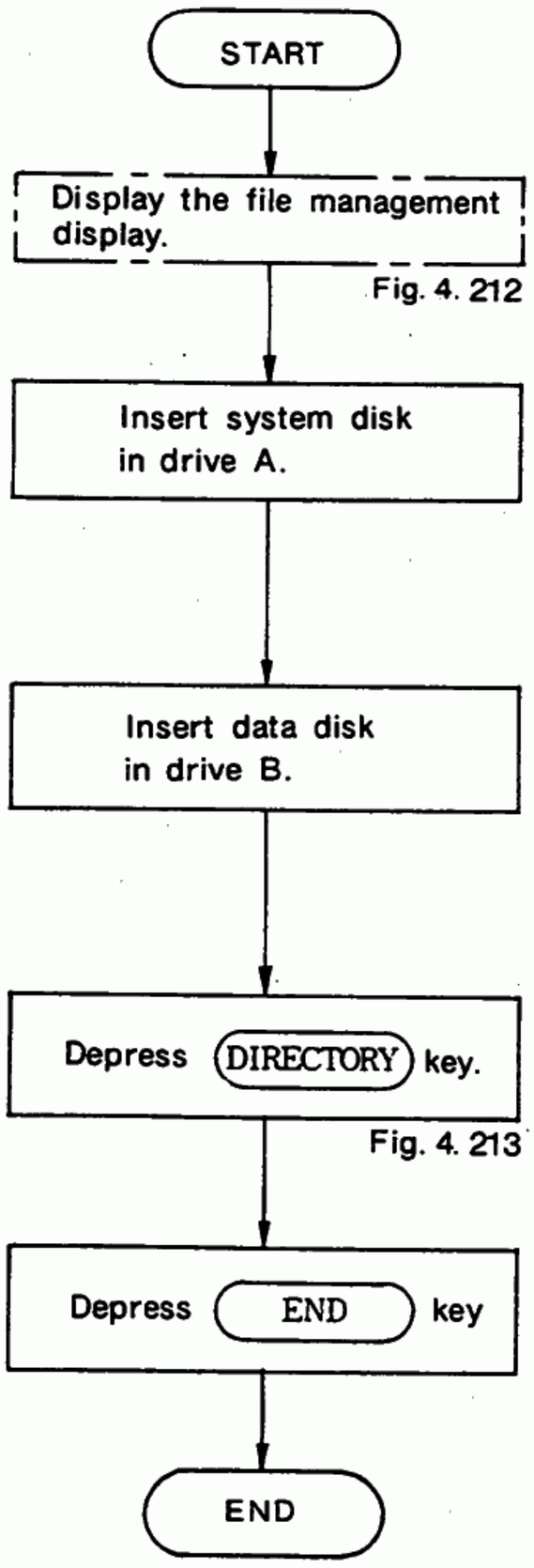


Fig. 4.212

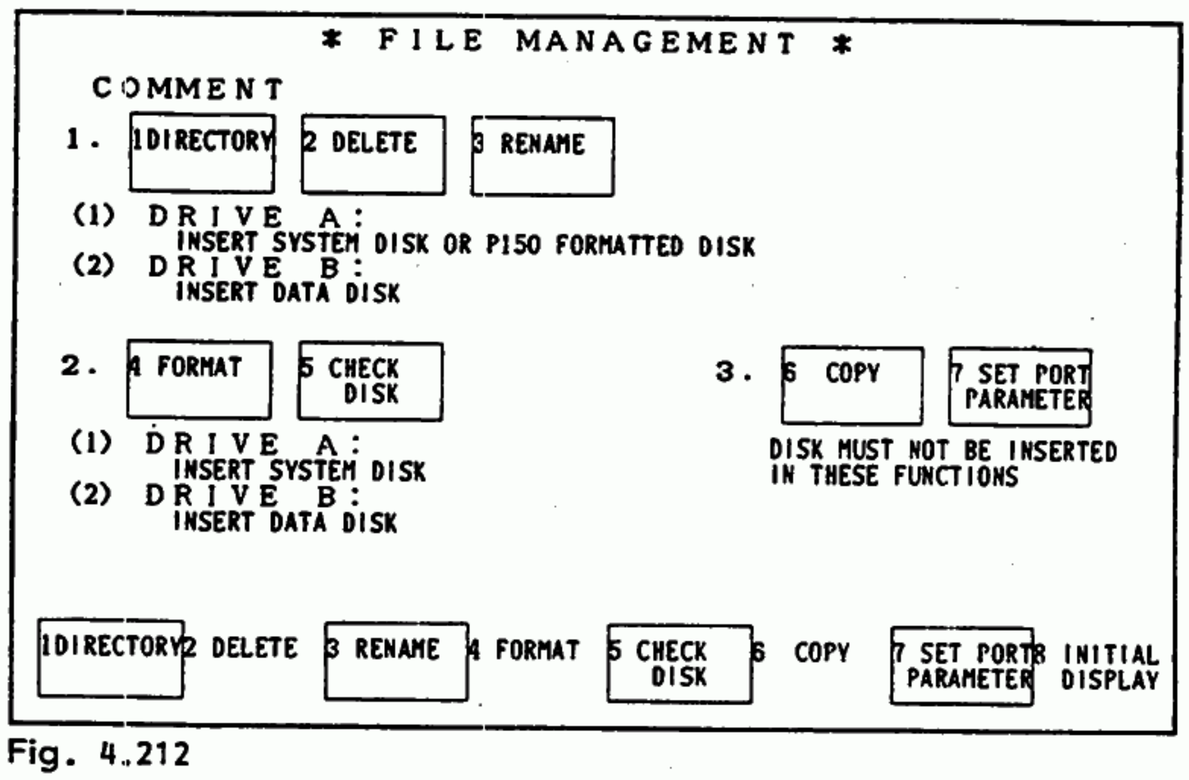


Fig. 4.212

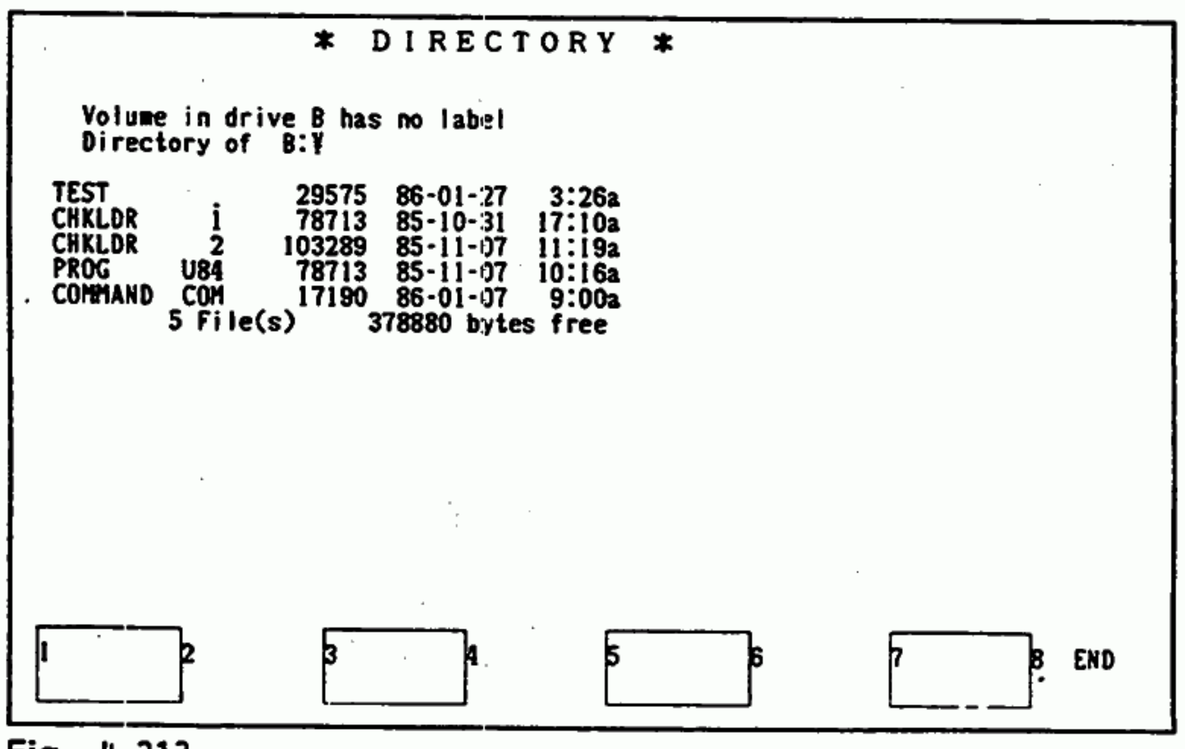


Fig. 4.213

NOTE

1. In place of a system disk, a disk formulated by P150 (containing "COMMAND. COM" file) can be used.
2. The file name format is: file name (8 characters max.), escape character (3 characters max.). The escape character may be omitted. When the it is used, a period (.) must be put in front of it.
   For file names and expanders, the following characters are usable:

   A to Z 0 to 9 $ & #

   % ' ( ) - @ -

   ~ { } ~ !

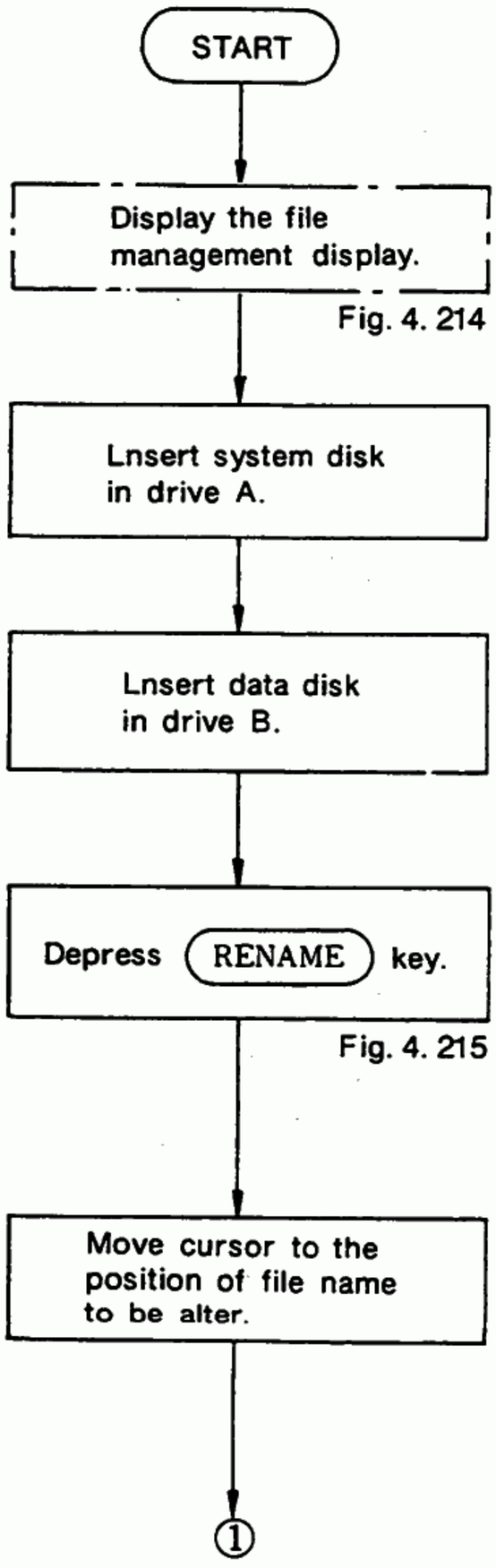
Although file names are written in both capital letters and small letters, P150 converts all characters into capital letters. However, following file names can not be used because they are used in the system.

AUX
CON
LST
PRN
NUL
IO. SYS
MSDOS. SYS
COMMAND. COM

(2) FILE RENAMING

The file names on the data disks can be altered. However, if the same name is already present on the disk, that name can not be used again.

POINT Make the data disk writable in advance.



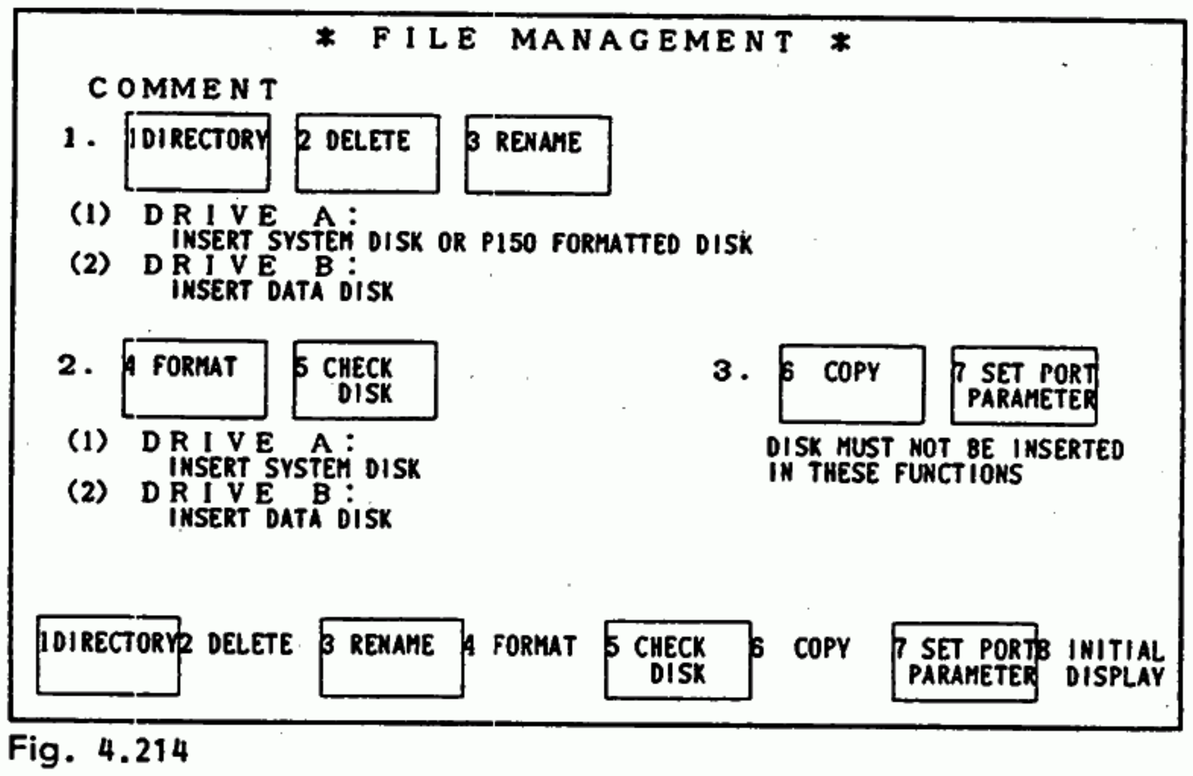


Fig. 4.214

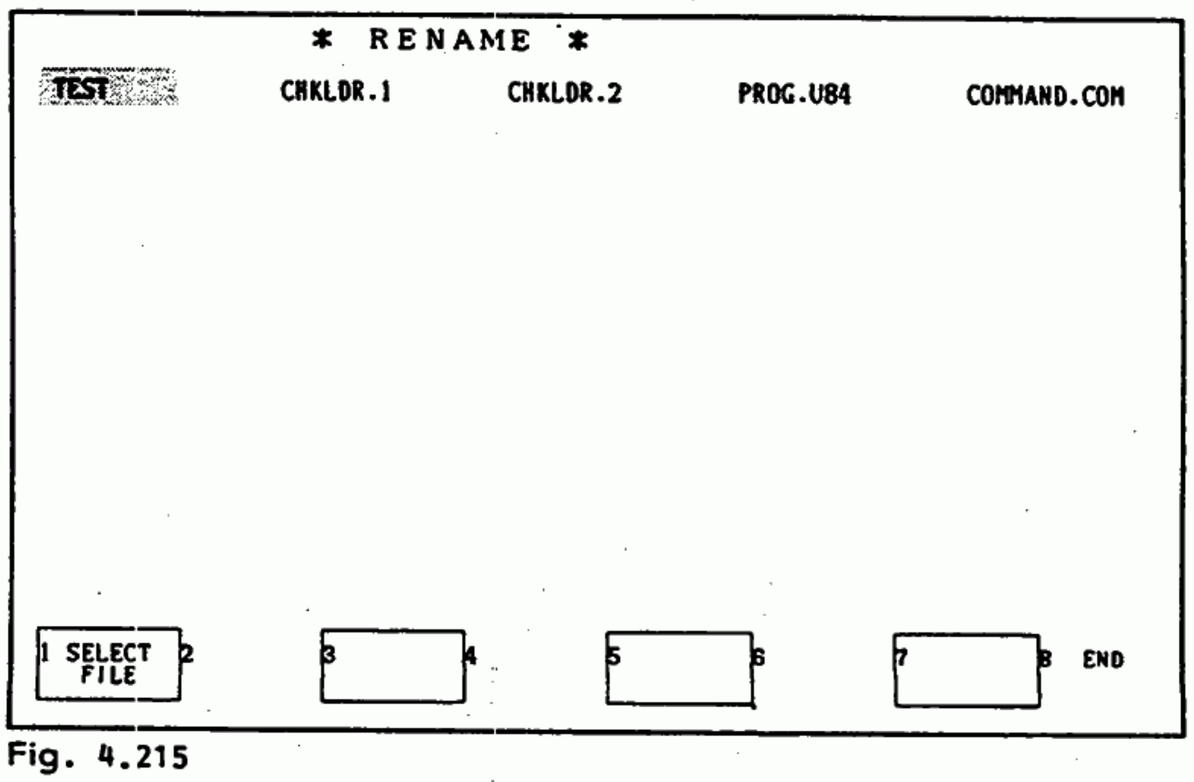


Fig. 4.215

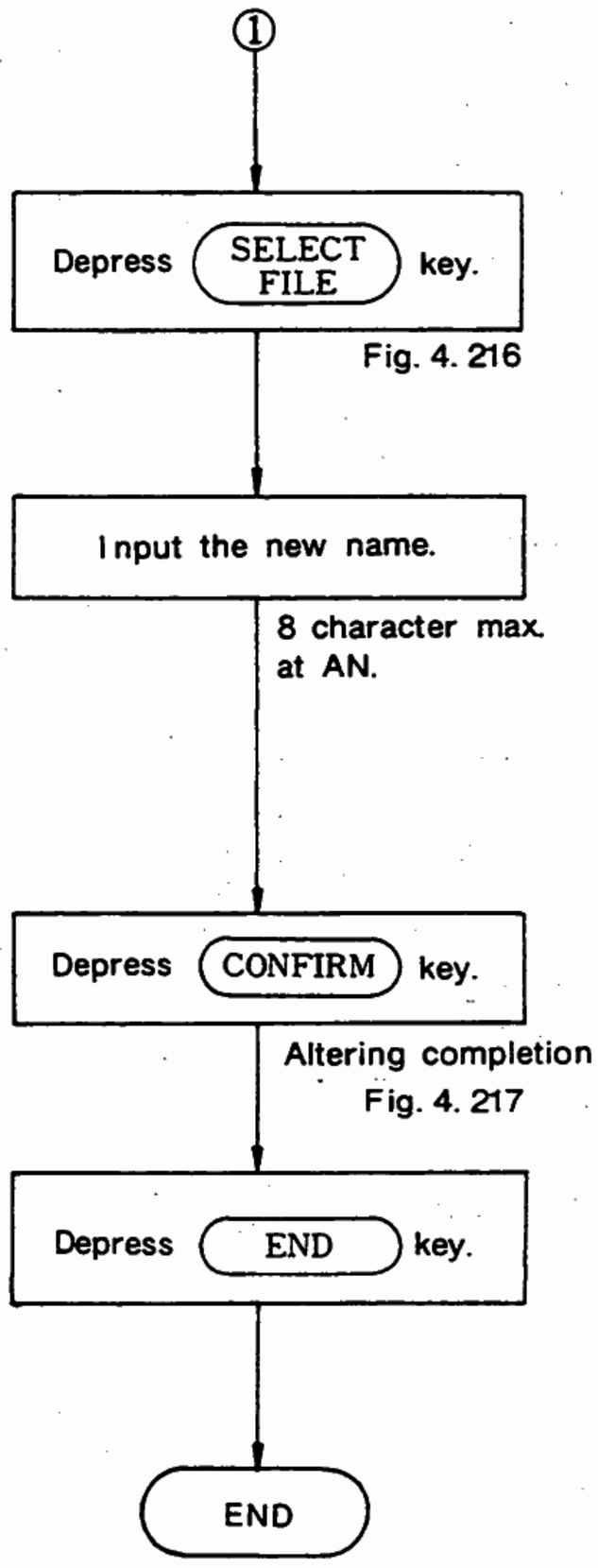


Fig. 4. 216

Fig. 4. 217

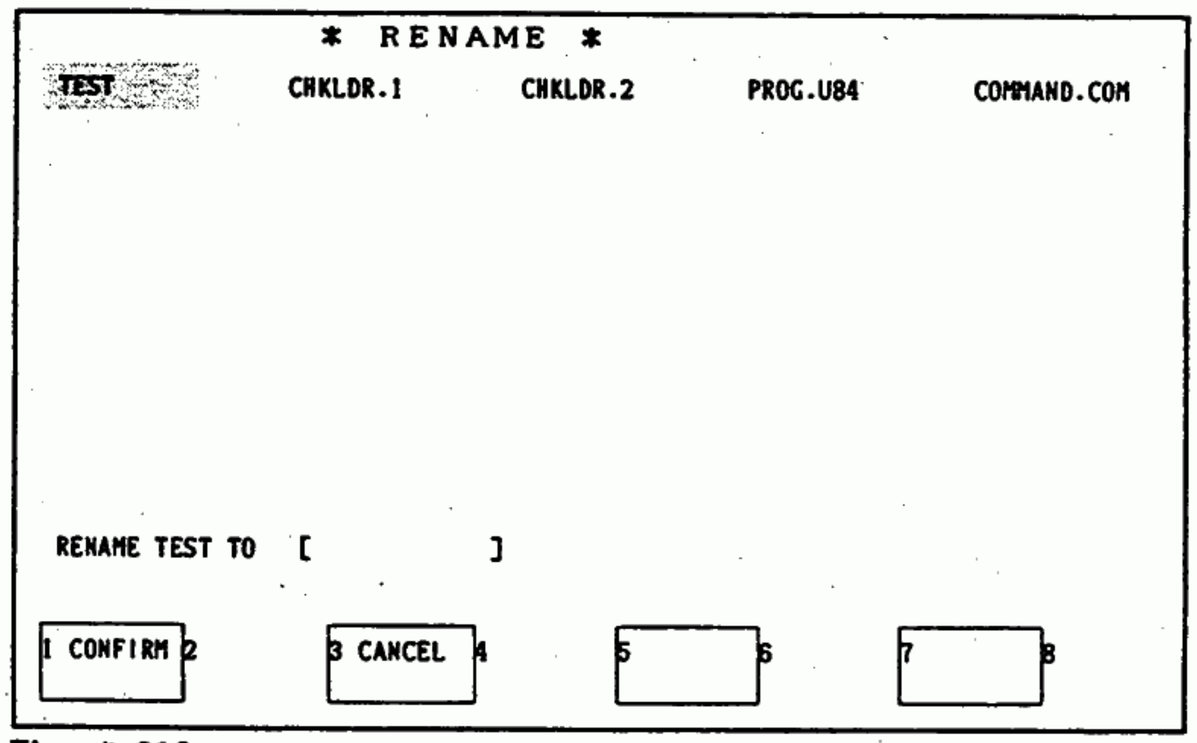


Fig. 4.216

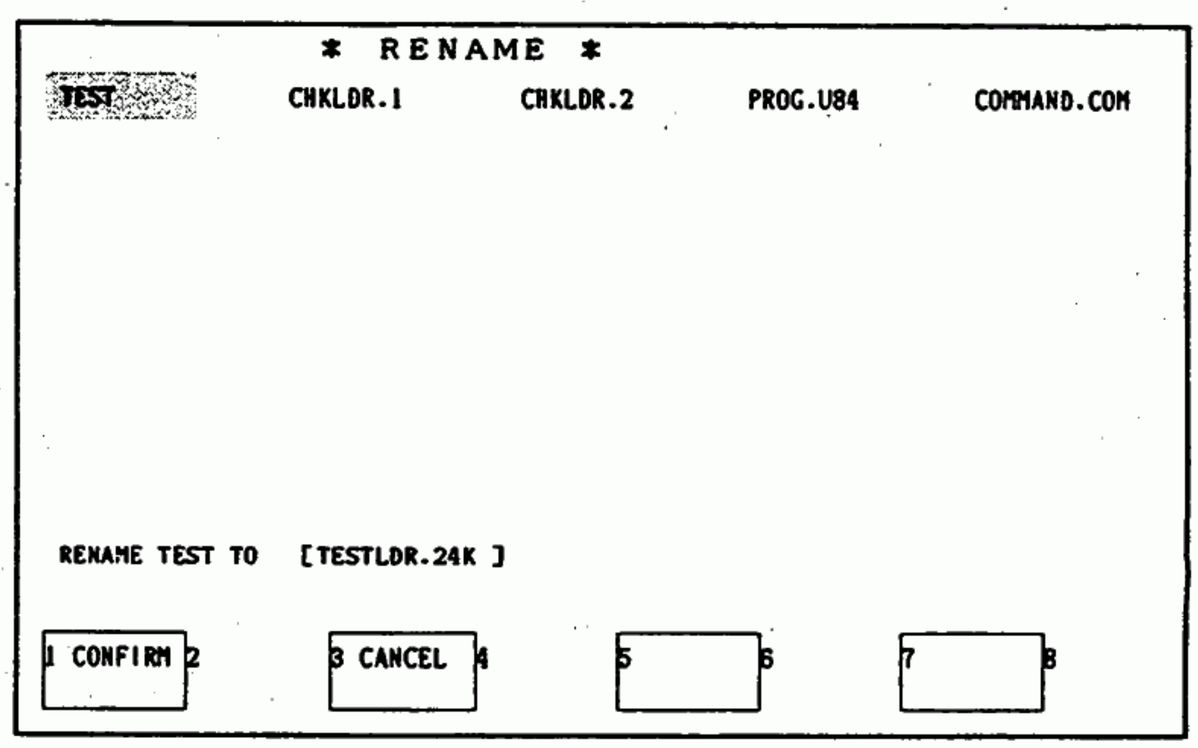


Fig. 4.217

NOTE

1. Depressing (CANCEL) key (in the display of Fig. 4.217) returns the display shown in Fig. 4.215.

2. In place of the system disk, a disk formatted by P150 (containing "COMMAND. COM" file) can be used.

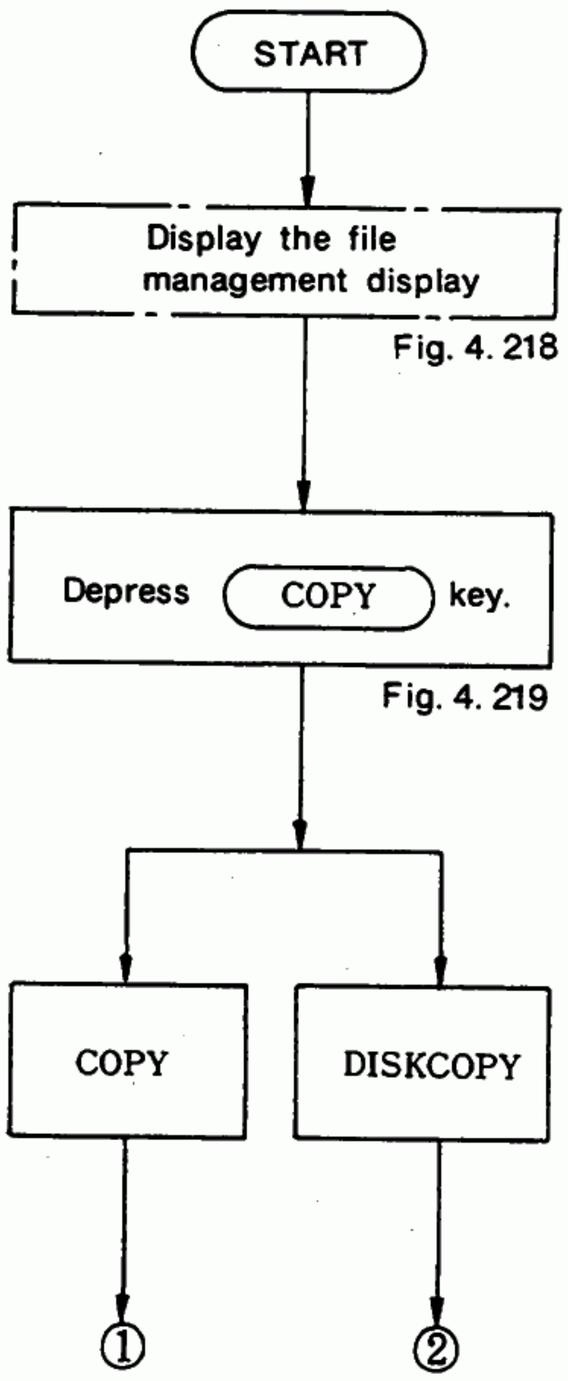
(3) FILE COPYING

The specified files or all the files can be copied from the disk in drive B to the disk in drive A.

Drive A...Destination disk (accepting copy)
Drive B...Source disk (original files)

POINT

Make the destination disk writable in advance.



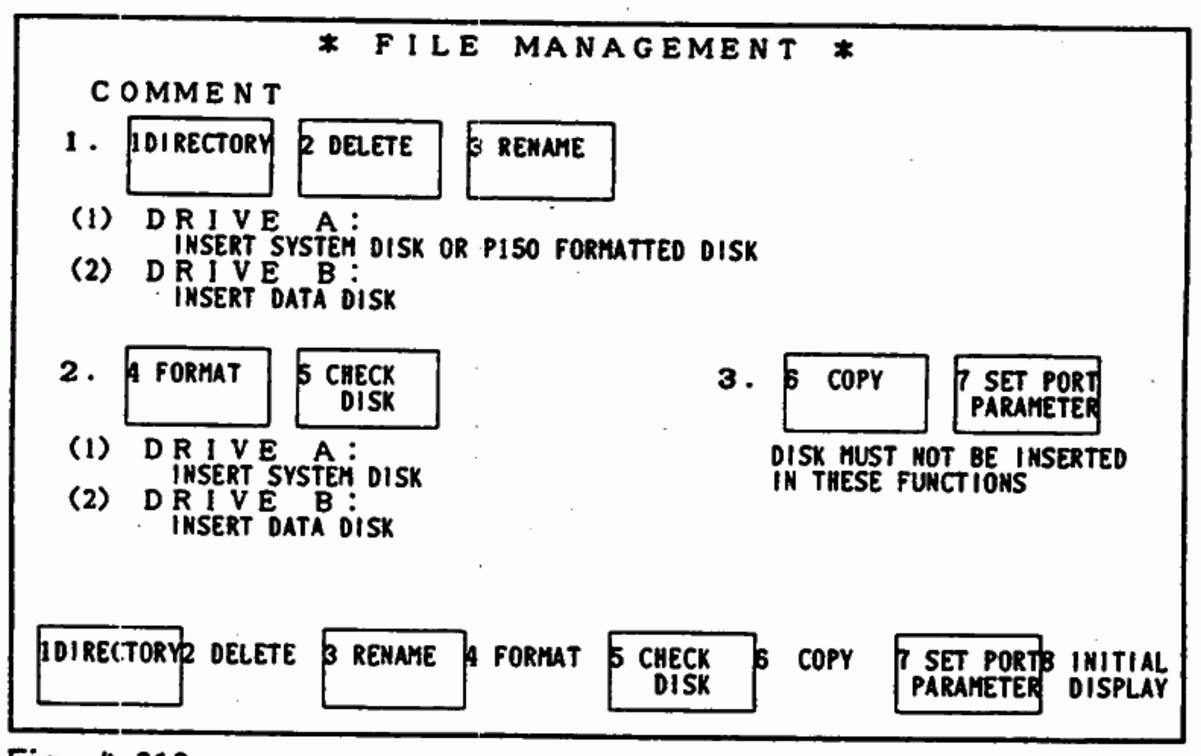


Fig. 4.218

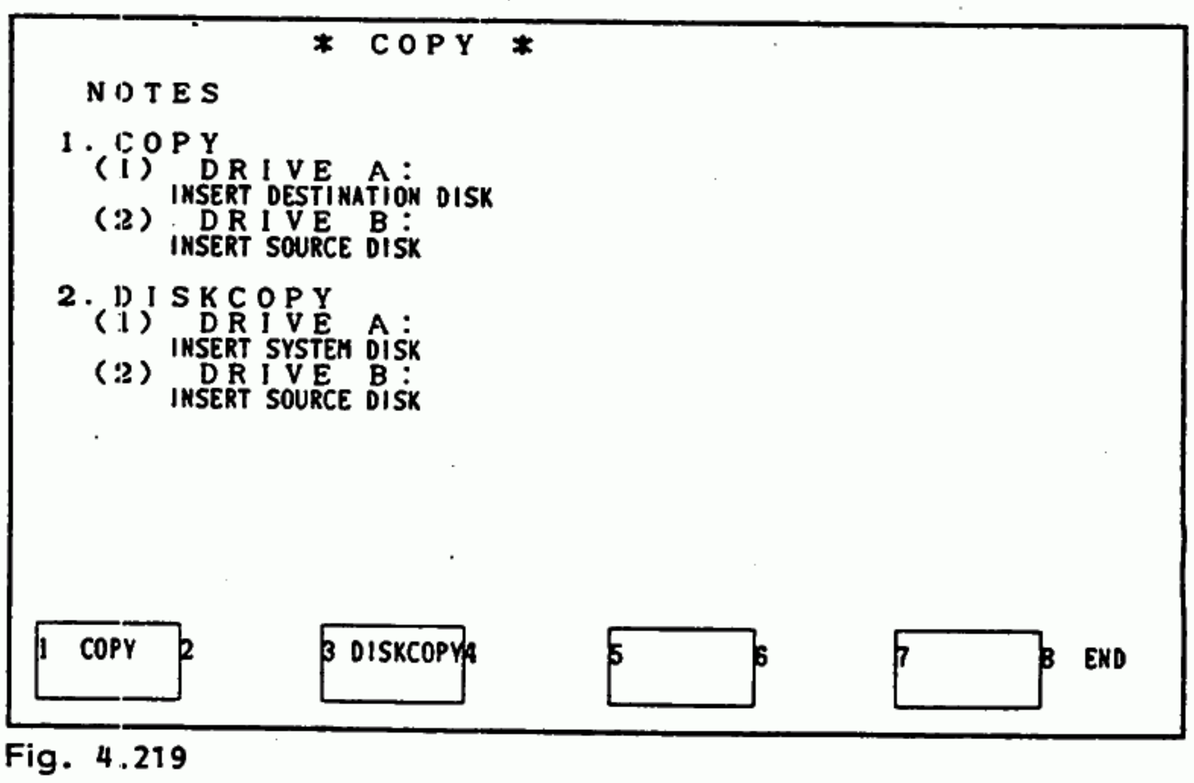


Fig. 4.219

NOTE

It is recommended that all the disks (especially important ones) are copied for backup purposes, as a safety measure against accidental damage or deletion of files.

■FILE COPY

Copying the specified file contents from the disk in drive B to the disk in drive A.

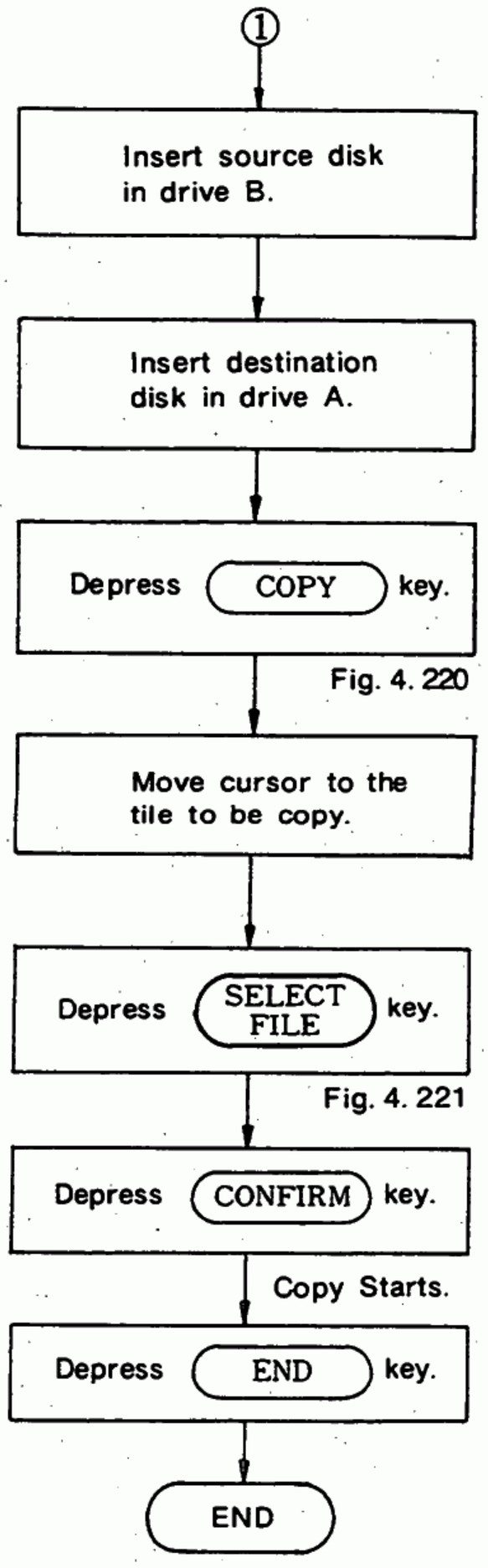


Fig. 4. 220

Fig. 4. 221

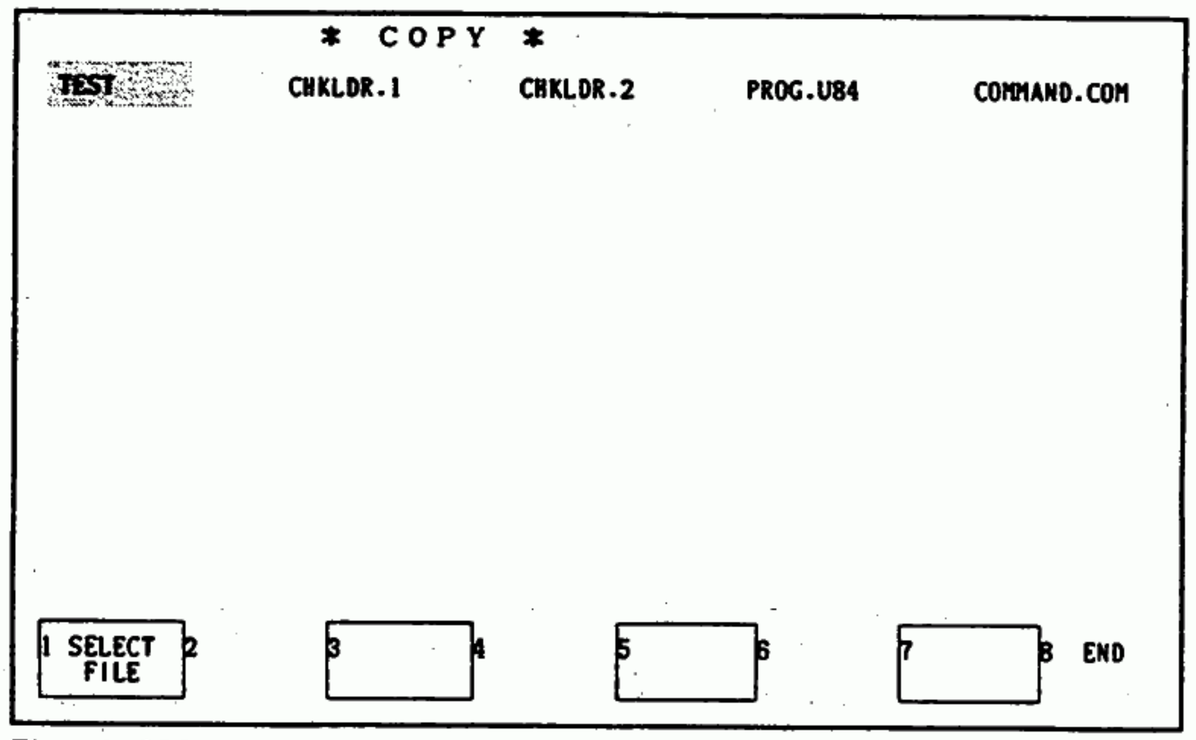


Fig. 4.220

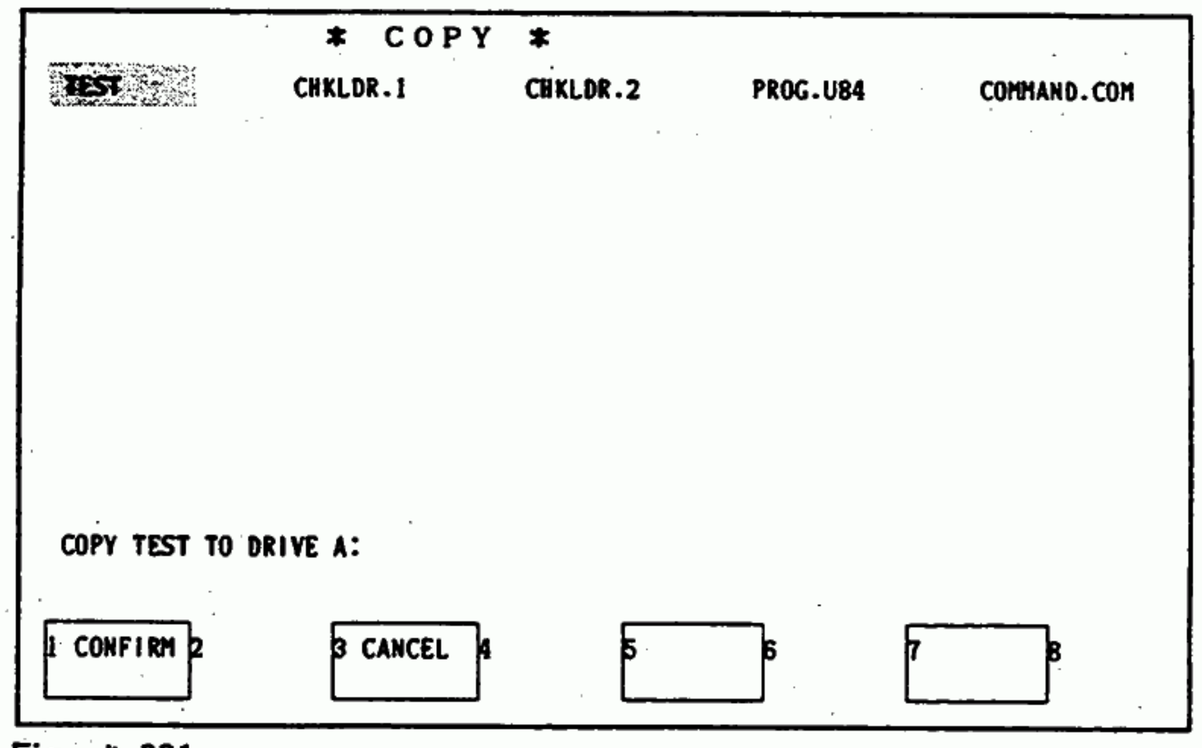


Fig. 4.221

NOTE

1. Make the destination disk writable in advance.
2. Depressing (CANCEL) key (Fig. 4.221) returns the display shown in Fig. 4. 219.

■VOLUME COPY

Copying the entire contents of the disk in drive B onto the disk in drive A.

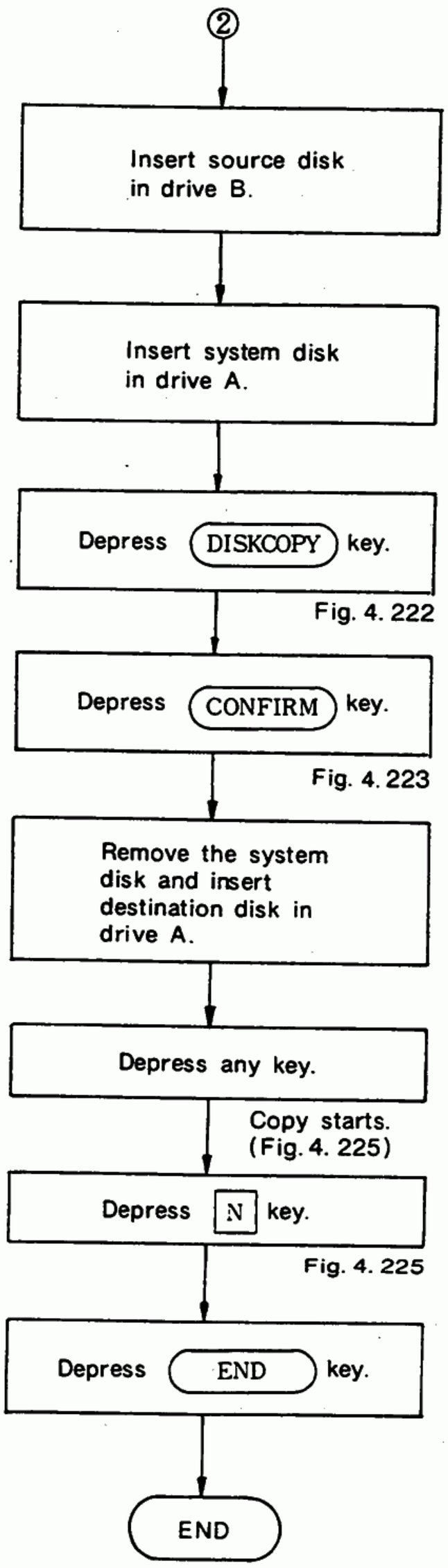


Fig. 4. 222

Fig. 4. 223

Fig. 4. 225

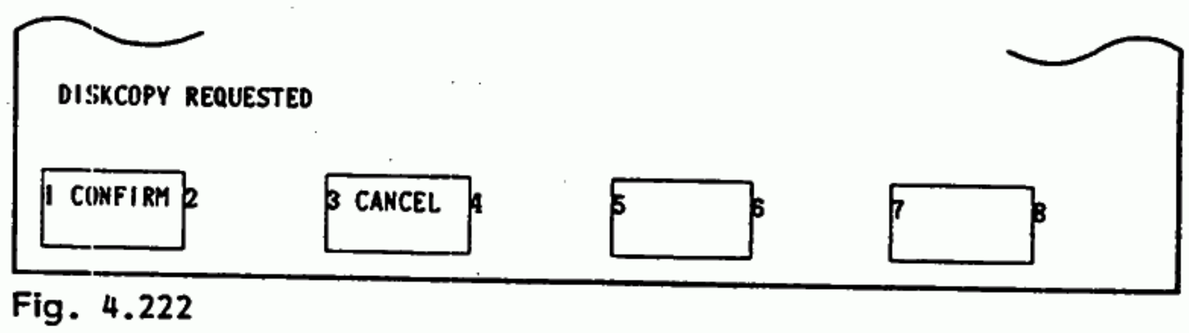


Fig. 4.222

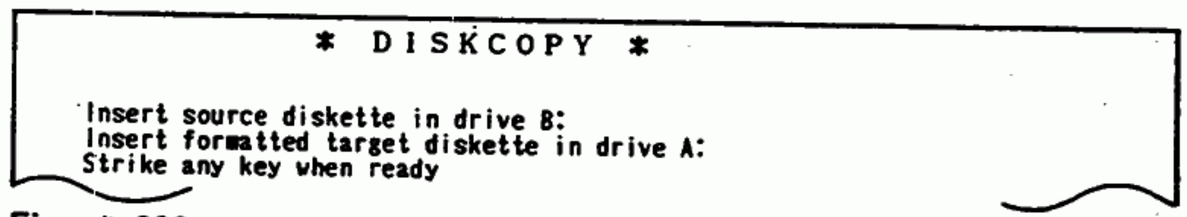


Fig. 4.223

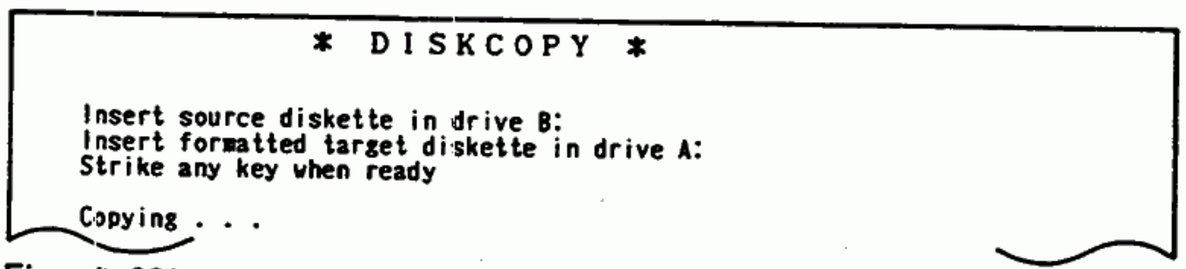


Fig. 4.224

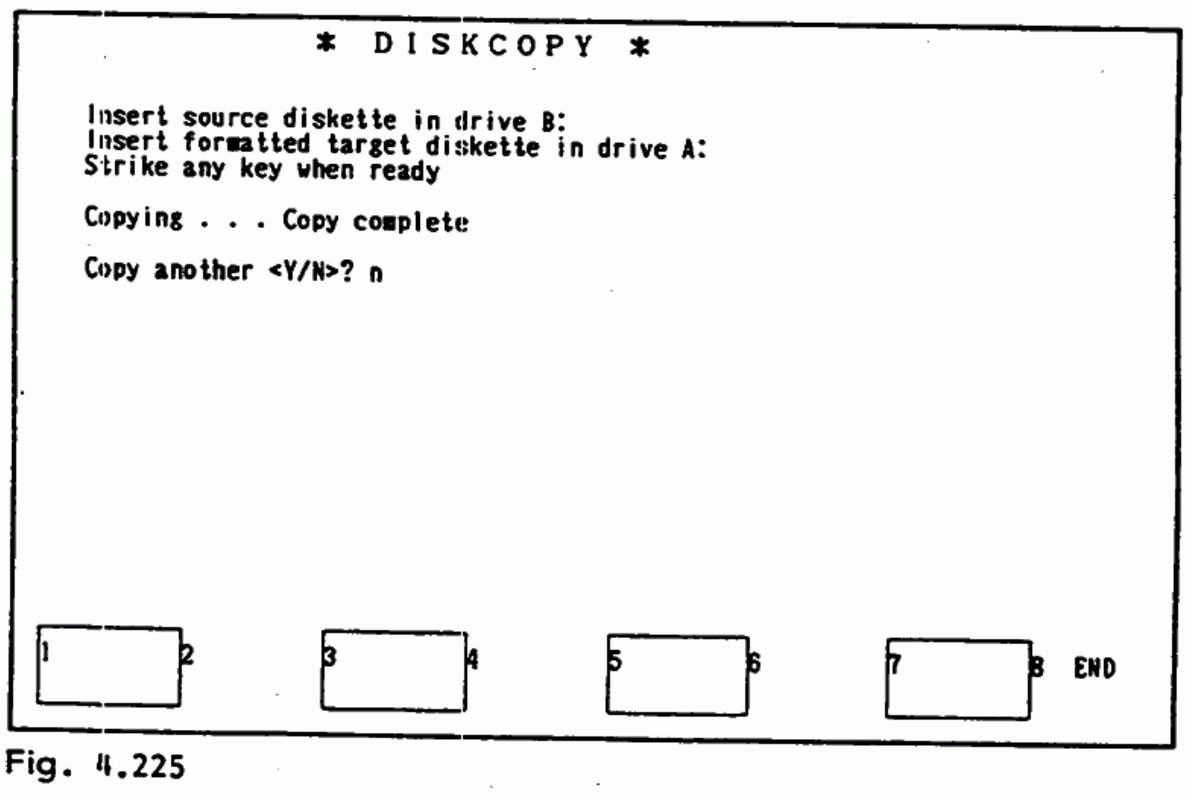


Fig. 4.225

NOTE

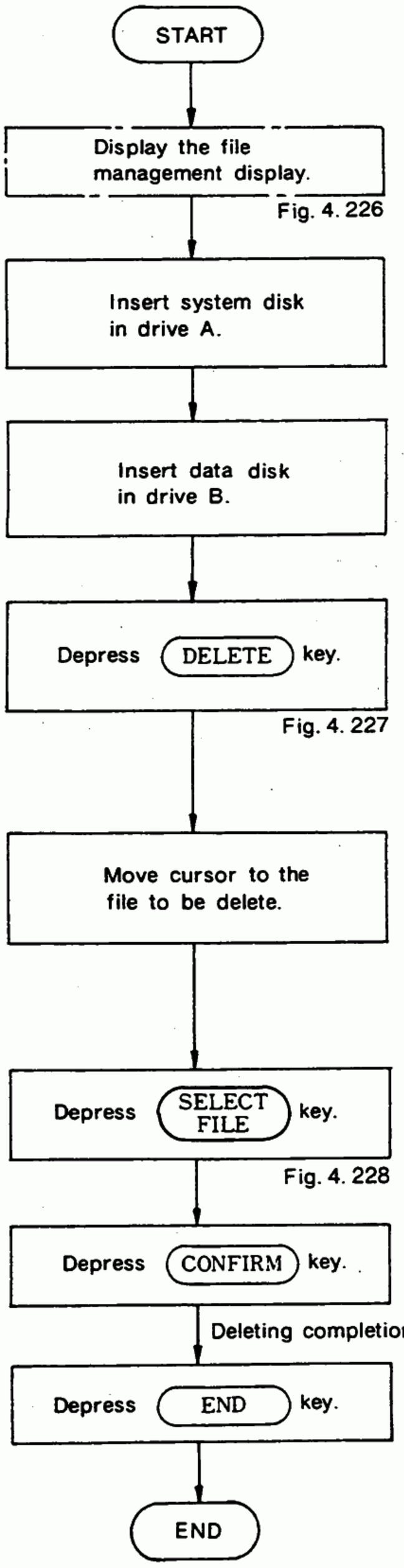
1. Make the destination disk writable in advance.
2. Depressing (CANCEL) key (Fig. 4.222) returns the display shown in Fig. 4.219.
3. To copy other disks as shown in Fig. 4.218, first depress [Y] key, and then make the same operations as shown above.

(4) FILE DELETING

Deleting unnecessary files in the data disk.

POINT

Make the data disk writable in advance.



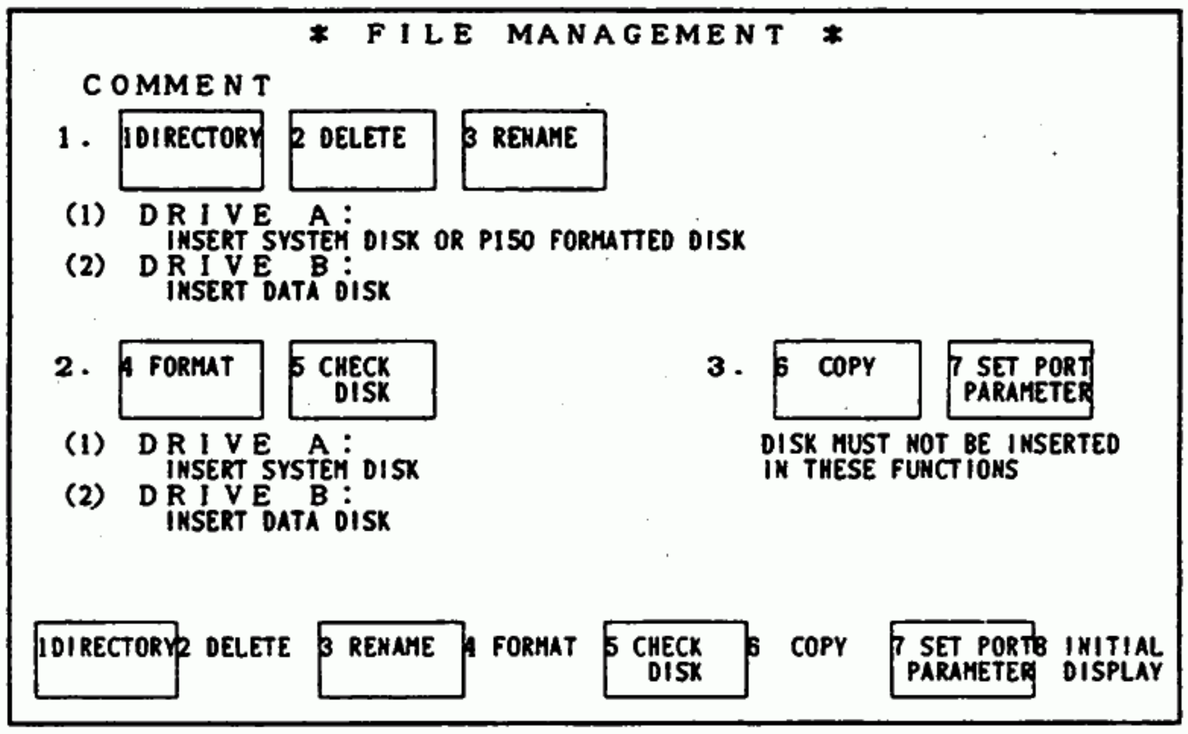


Fig. 4.226

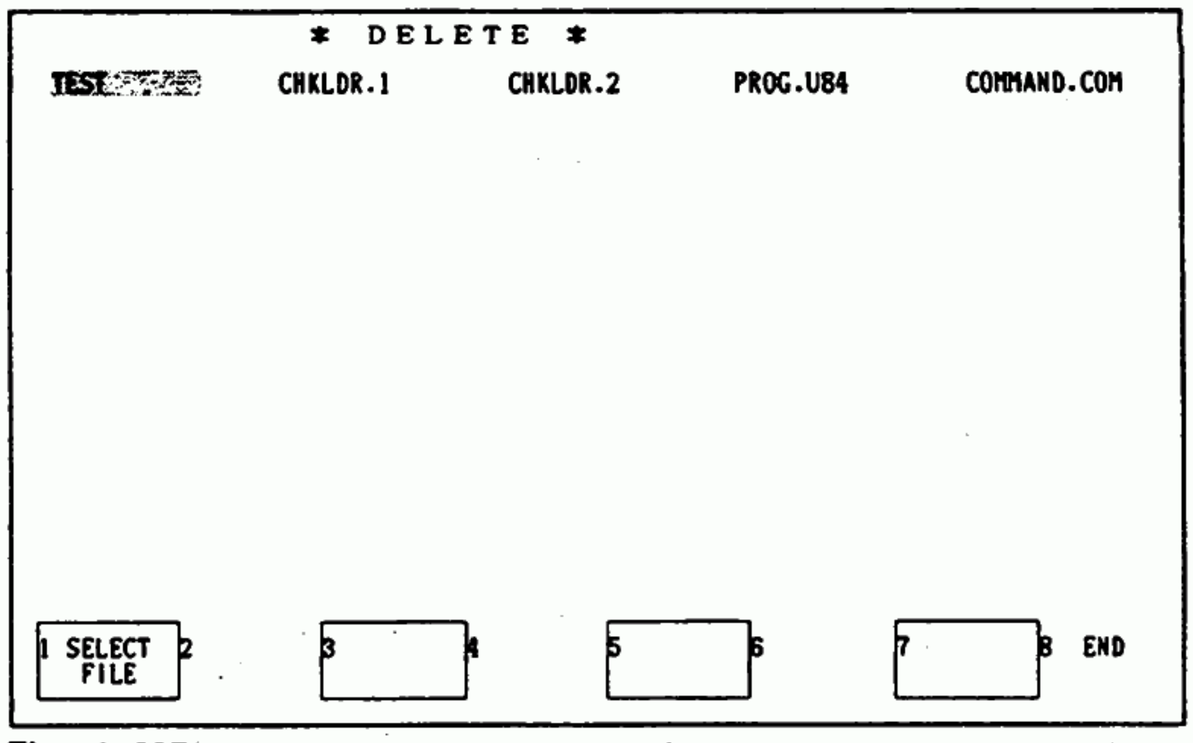


Fig. 4.227

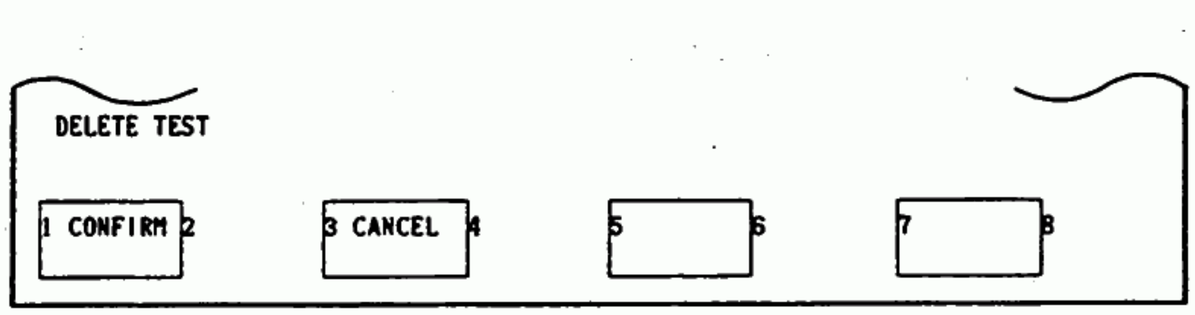


Fig. 4.228

NOTE

1. Depressing (CANCEL) key (Fig. 4.228) returns the display as shown in Fig. 4.227.
2. A disk formatted by P150 (containing "COMMAND. COM" file) can be used in place of the system disk.

IMPORTANT

Be sure to make disks important to write disable state.
Do not delete the file "COMMAND. COM" because this disk will lose the function for data disk.

4. 9 DISPLAY PRINTING

Using a printer available on the market, connected to the parallel port* of P150, then depressing [SHIFT] and [PRINT / CHG NODE] keys simultaneously produces a hard copy of the display.

(a) Applicable printer

· PC-PR201 F (made by NEC Co., Ltd.)

· PC-PR101 F(made by NEC Co., Ltd.)

(b) Necessary equipment

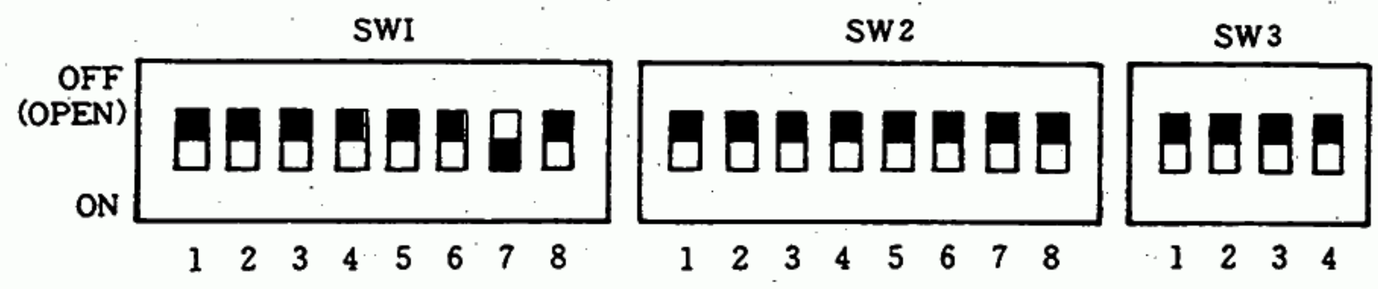
The following items are required in addition to U84, P150, and the cable (JZMSZ-W1006) connecting them:

Name	Type	Q'ty	Remarks
Cable between P150 and printer	PC-8894	1	Delivered with printer
Printer	PC-PR201F PC-PR101F	1	Purchased from maker or agents.
Print Paper	10 × 11 inches	1 set	

Note: Cable and Printer above are made by NEC Co., Ltd.

(c) Transmission conditions setting

With DIP switches of PC-RR201F, or PC-PR101F, observe the following.



POINT

· Make this setting with P150 power ON/OFF switch turned off.

(d) Printer connection cable

The cable delivered with the printer should be used.

*Made by Centronics Data Computer Corp.

5. MESSAGES

5. 1 ERROR MESSAGES FOR OPERATION

Table 5.1 Error Messages for Operation

Error Message	Description	Action
ADDRESS LIMIT	The number of I/O addresses assigned exceeds the available space.	Depress CLR AR / CLR ERR key.
ANOTHER SC SAVED FILE	In load or verify operation, file type is wrong.	Depress CLR AR / CLR ERR key.
AR NOT DECIMAL	The information being entered must be decimal, as in the case of reference numbers.	Depress SHIFT and CLR AR / CLR ERR keys and enter decimal data.
CAN NOT COPY SYSTEM DISK	The system disk is inserted in drive B, and COPY key is depressed.	Insert the source disk in drive B.
CAN NOT DELETE SYSTEM FILE	The system disk is inserted in drive B, and DELETE key is depressed.	Insert the data disk in drive B.
CAN NOT DISPLAY SYSTEM FILE	The system disk is inserted in drive B, and DIRECTORY key is depressed.	Insert the data disk in drive B.
CAN NOT LOGIN-UNIT HAS PROGRAMMER ATTACHED	Only one programming panel at a time may be attached to a U84 in program mode.	Attach one programming panel in monitor mode.
CAN NOT READ DISK	In load or verify operation, data read error of disk occurs.	Depress CLR AR / CLR ERR key.
CAN NOT RENAME	"COMMAND.COM" file cannot rename.	Cancel the renaming.
CAN NOT RENAME SYSTEM FILE	The system disk is inserted in drive B, and RENAME key is depressed.	Insert the data disk in drive B.
CAN NOT WRITE TO DISK	In save operation, data write error to disk occurs.	Depress CLR AR / CLR ERR key.
COIL NOT ALLOWED HERE	A coil may not be placed in this position, such as between two contacts.	Move cursor to appropriate area and enter coil.
COIL NOT DISABLED	FORCE ON or FORCE OFF key is depressed when the coil has not been disabled.	Disable the coil.
COIL NOT IN A NETWORK	The requested coil has not yet been used.	Depress CLR AR / CLR ERR key.
COIL USED	The requested coil has already been programmed and may not be used again.	Select new coil number.
COMPRESS NOT ALLOWED DUE TO ROW #7	Vertical compression is attemped when the cursor is at row 7.	Depress CLR AR / CLR ERR key.
CONTROLLER RUNNING	The attempted action cannot be performed because the controller is running.	Stop controller, then perform action.

Table 5.1 Error Messages for Operation (Cont'd)

Error Message	Description	Action
DISK NOT INSERTTED OR DISK ERROR	The disk is not inserted or is defective.	Insert or change the disk.
DISK WRITE PROTECTED	When data disk is in write disable state, file operation or save operation is executed.	Make the disk writable.
END OF LOGIC MEMORY	PREV GET NEXT key is depressed with the last network displayed on the screen.	Depress CLR AR / CLR ERR key.
EXPAND NOT ALLOWED	Network expansion (either vertical or horizontal) is not allowed due to space.	Stop network expansion or change the network circuit.
FILE ALREADY EXIST	In rename operation, the same file name already exists in data disk.	Change the file name.
FILE ALREADY EXIST. OVER WRITE OK?[Y/N]	In save operation, the same file name already exists in data disk.	If the overwrite is allowed, depress [Y] key. If it is not allowed, depress [N] key.
FILE NOT FOUND	In load or verify operation, the specified file is not present in the data disk.	Input the file name again.
FUNCTION NOT ALLOWED	The wrong function key is depressed.	Depress the appropriate function key.
ILLEGAL BCD OR BINARY	The number of register points exceeds 9 when (SET BCD) or (SET BIN) key is depressed.	Select legal number.
ILLEGAL CHANNEL NUMBER	(SELECT CHNNEL) key is depressed when the channel number has not been set in AR in the valid range, 1 through 10, inclusive.	Select legal channel number.
ILLEGAL POINTS	(SET POINT) key is depressed when POINTS have not been set in AR in the valid range, 1 through 128, inclusive.	Select legal POINTS.
ILLEGAL RACK NUMBER	(SELECT RACK) key is depressed when the rack number has not been set in AR in the valid range, 1 through 4, inclusive.	Select legal rack numbers.
INVALID DATA	The data is not be stored in register exceed 9999 decimal or FFFF hexadecimal.	Set valid data.
INVALID DATA	The format of data input is wrong.	Set the date correctly.
INVALID FILE NAME	The same file name is assigned for system.	Change the file name.

Table 5.1 Error Messages for Operation (Cont'd)

Error Message	Description	Action
INVALID MENU NO.	The menu must be 1 through 3, inclusive.	Set valid number.
INVALID NETWORK NUMBER	· ERASE / GET key is depressed when "0" has been set in AR. · MOVE NETWORK key is depressed when the network number given does not correspond to any network in the controller.	Set valid network number.
INVALID RANGE	Constant sweep value has not been set in the valid range, 10 through 200, inclusive.	Set constant sweep value in the valid range.
INVALID REFERENCE NUMBER	The reference number is not valid for the type of node or operation used.	Enter valid reference number.
INVALID REPLACEMENT	The present element cannot be replaced with a new one directly.	Delete the present element and enter a new one.
INVALID UNIT NUMBER	ATTACH operation is performed when the unit number has not been set in the valid range, 1 through 247, inclusive.	Enter unit number from 1 to 247.
LIMIT OF INPUT ASSIGNMENT	The limit for input allocation has been reached.	Reattempt input allocation.
LIMIT OF OUTPUT ASSIGNMENT	The limit for output allocation has been reached.	Reattempt output allocation.
MEMORY PROTECT ON	The desired action may not be performed because the U84 memory protect switch is ON.	Turn off the memory protect switch.
MISCOMPARE IN PROGRAM AREA	Data mismatch is found in logic area during verifying process.	Reattempt operation from first step.
MISCOMPARE IN SYSTEM AREA	Verifying errors in traffic cop, total check and the last logic address network number.	Reattempt operation from first step.
MISCOMPARE IN TRAFFIC COP AREA	Verifying errors in the traffic cop area.	Reattempt operation from first step.
MISCOMPARE PROGRAM SIZE	Loading data size is larger than program memory size of SC, or verifying errors in the program memory size of SC.	Depress CLR AR / CLR ERR key.
NETWORK NOT FOUND HIGHEST #: xxxxx	ERASE / GET key is depressed when the requested network number has been set in AR large than the last one.	Set the valid network number.
NO ELEMENT AT CURSOR	· TRACE operation cannot be performed because the cursor is not on any element. · ENTER key is depressed when the cursor is not on any element.	· Place cursor on appropriate element and perform operation · Depress CLR AR / CLR ERR key.

Table 5.1 Error Messages for Operation (Cont'd)

Error Message	Description	Action
NO ELEMENT TO COMPRESS	Horizontal compression is attempted when no element exists right of cursor.	Depress CLR AR / CLR ERR key.
	Vertical compression is attempted when no element exists under the cursor.	Depress CLR AR / CLR ERR key.
NO EMPTY SPACE	Occurs during TRACE function. Indicates that there is no more room for displaying traced references in the reference area.	Depress CLR AR / CLR ERR key.
NO NETWORK IN THE CONTROLLER	ERASE / GET or PREV / GET NEXT key is depressed when no network exists in U84. depressed at no network in U84.	Depress CLR AR / CLR ERR key.
NO NETWORK ON SCREEN	Network deletion operation is performed when no network is displayed.	Depress CLR AR / CLR ERR key.
NO REFERENCE PRESENT	The reference deletion operation cannot be performed because no reference is present at the cursor.	Depress CLR AR / CLR ERR key.
NO SEARCH PARAMETERS	The SEARCH operation cannot be performed when no parameters have been set.	Set search data.
NO SYSTEM DISK	The system disk is not inserted in drive A.	Insert the system disk.
NOT ALLOWED DUE TO COIL	The insertion of a network or placement of a vertical is not possible due to the position of a coil.	Depress CLR AR / CLR ERR key.
NOT ATTACHED TO THE CONTROLLER	The programming operation is performed with the P150 not attached to the controller.	Attach to controller and perform operation.
NOT ENOUGH MEMORY	In save operation, there is not enough space in the disk to save the program of SC.	Change the data disk.
NOT ENOUGH ROOM	This message appears when attempt is made to insert elements in 8 or more rows (7 max.) · 2-element function: 6-row max · 3-element function: 5-row max	Redesign network or go to next network.
NOT ENOUGH ROOM TO COMPRESS	This message indicates that the network cannot be compressed (vertically or horizontally) due to lack of space.	Stop network compression or change the network circuit.
NOT IN PROGRAM MODE	The selected function or key is only operation when the P150 is in monitor mode.	Change the operation mode.
ONLY DECIMAL OR HEXADECIMAL CHARACTERS ALLOWED IN AR	Special characters are not allowed in the AR. Only decimal and hexadecimal are allowed.	Depress the decimal or hexadecimal characters (0 to 9, A to F).
PORT EMPTY OR UNATTACHED	· There is no connection between P150 and U84. · The U84 power ON/OFF switch is not turned on.	Check connections and reattempt operation.

Table 5.1 Error Messages for Operation (Cont'd)

Error Message	Description	Action
REFERENCE ON ALTERNATE SCREEN	In trace operation, the data are displayed in expanded reference area.	Confirm with [CHG SCREEN] key depression.
SC MEMORY FULL	The limit for logic area has been reached.	Depress [CLR AR / CLR ERR] key.
SEARCH FAILED	No search data is found.	Depress [CLR AR / CLR ERR] key.
SPECIFY REFERENCE NUMBER	With "????" displayed, a copy screen was stored in the U84 memory.	Specify reference number.
SPECIFY REF # PARAMETER	The quantity is set before reference No. is set.	Select reference number parameter previously.
	In I/O allocation, (WRITE T-COP) key is depressed before the quantity is set.	Set the quantity completely.
SPECIFY TIME IN MULTIPLES OF 10	Scan time is not specified time in multiples of 10.	Specify time in multiples of ten.
SPECIFY TIME PARAMETER	(COMMENCE) key is depressed when no scan time has been specified.	Specify scan time.
START OF LOGIC MEMORY	[SHIFT] and [PREV GET NEXT] keys are depressed with network 1 displayed on screen.	Depress [CLR AR / CLR ERR] key.
TIMEOUT ERROR-PRINTER	Communication timeout error occurs at printing.	Depress [CLR AR / CLR ERR] key.
TRACE STACK EMPTY	RETRACE operation is not performed because "TRACE:NONE" is displayed on screen.	Depress [CLR AR / CLR ERR] key.
VERTICAL NOT ALLOWED IN THIS ROW	A vertical short-circuit operation is performed in row 7.	Depress [CLR AR / CLR ERR] key.
CAUTION: REFERENCE MULTIPLY IN TRAFFIC COP	The same reference No. has already been set.	If the setting is proper, depress (PROCEED) key. If not, depress (CANCEL) key.
#OF COIL MUST BE MULTIPLES OF 8	· The first number in discrete I/O allocation is invalid. · Coil is not specified in multiples of 8 in discrete I/O allocation.	Select valid number.

5. 2 MESSAGE FOR OPERATION

ATTACHING
RUNNING SC
SC START REQUESTED
STOPPED SC
SC STOP REQUESTED
SC LOGIC MEMORY CLEAR REQUESTED
SC TRAFFIC COP MEMORY CLEAR REQUESTED
SC ALL MEMORY CLEAR REQUESTED
POWER DISPLAY INVALID - NETWORK SKIPPED
CONSTANT SWEEP CANCEL
CONSTANT SWEEP INVOKED
CONSTANT TIME: XXX
SEARCHING
DISCRETE XXXX DISABLED (USED)
DISCRETE XXXX DISABLED (NOT USED)
CANCEL PROTECTION OF SYSTEM DISK AND INSERT IN DRIVE A:
SINGLE SWEEP TRIGGERED
SAVE REQUESTED
SAVE COMPLETE
WRITING TRAFFIC COP
READING TRAFFIC COP
DISCRETE 1XXXX DISABLED
VERIFY REQUESTED
VERIFY COMPLETE
NO OTHER COIL DISABLED
DISK COPY REQUESTED
LOAD REQUESTED
LOAD COMPLETE
XXXX MISCOMPARE: VERIFY COMPLETE
DELETE XX - XX
RENAME XX - XX TO [ ]
COPY XX - XX TO DRIVE A:

5. 3 ERROR MESSAGE FOR SYSTEM

Error Message	Description	Action
CRC FAILURE	Indicates a communications error picked up by the error checking of P150 (CRC* error).	Perform the operation again from first step.
FATAL I/O ERROR MUST INITIALIZE RESET SEQUENCE	Communications error message has been cleared from screen. RESET / EXIT key must be depressed to be able to reinstate communications.	Perform the operation again from first step.
ILLEGAL PORT PARAMETERS	Parameters for Port 1 to Port 4 at U84 are not set correctly.	Set legal parameters in RAP.
INVALID ADDRESS INVALID COMMAND INVALID NODE INVALID PARAMETER	· Communications error. Message not received correctly due to invalid field. · The wrong floppy disk for U84 has been inserted.	· Perform the operation again from first step. · Use the appropriate floppy disk for U84.
NO END OF LOGIC	No data indicated program end (EOL). (EOL).	Refer to MEMOCON-SC U84 User's Manual, Design and Maintenance (SIE-C815-10.1).
SC CRC FAILURE	Indicates a communication error picked up by the error checking of of SC. (CRC* check error)	Perform the operation again from first step.
SC UART STATUS ERROR	Indicates a communication error picked up by the error checking of of SC. (This error may be influenced by external noise.)	Perform the operation again from first step. (Avoid any external noise.)
STOPPED SC SYSTEM ERROR: xxxx	Displays the stop status of U84 by hexadecimal.	Refer to MEMOCON-SC U84 User's Manual, Design and Maintenance (SIE-C815-10.1).
TIMEOUT ERROR-COMMUNICATIONS DOWN	Communications error in message U84.	· Check parameters at P150 and U84. · Check cable connection. · Set U84 power ON/OFF switch to ON→OFF→ON.

*CRC: Cyclical redundancy check

MEMOCON-SC U84,U84S

PROGRAMMABLE CONTROLLER

P150 PROGRAMMING PANEL

TOKYO OFFICE
New Pier Takeshiba South Tower, 1-16-1, Kaigan, Minatoku, Tokyo 105-0022 Japan
Phone 81-3-5402-4511 Fax 81-3-5402-4580

YASKAWA ELECTRIC AMERICA, INC.
Chicago-Corporate Headquarters
2942 MacArthur Blvd. Northbrook, IL 60062-2028, U.S.A.
Phone 1-847-291-2340 Fax 1-847-498-2430
Chicago-Technical Center
3160 MacArthur Blvd. Northbrook, IL 60062-1917, U.S.A.
Phone 1-847-291-0411 Fax 1-847-291-1018

MOTOMAN INC. HEADQUARTERS
805 Liberty Lane West Carrollton, OH 45449, U.S.A.
Phone 1-937-847-6200 Fax 1-937-847-6277

YASKAWA ELÉTRICO DO BRASIL COMÉRCIO LTDA.
Avenida Fagundes Filho, 620 Bairro Saude-Sao Pãulo-SP, Brazil CEP: 04304-000
Phone 55-11-5071-2552 Fax 55-11-5581-8795

YASKAWA ELECTRIC EUROPE GmbH
Am Kronberger Hang 2, 65824 Schwalbach, Germany
Phone 49-6196-569-300 Fax 49-6196-888-301

Motoman Robotics AB
Box 504 S38525 Torsås, Sweden
Phone 46-486-48800 Fax 46-486-41410

Motoman Robotec GmbH
Kammerfeldstraße1, 85391 Allershausen, Germany
Phone 49-8166-900 Fax 49-8166-9039

YASKAWA ELECTRIC UK LTD.
1 Hunt Hill Orchardton Woods Cumbernauld, G68 9LF, United Kingdom
Phone 44-1236-735000 Fax 44-1236-458182

YASKAWA ELECTRIC KOREA CORPORATION
Paik Nam Bldg. 901 188-3, 1-Ga Euljiro, Joong-Gu Seoul, Korea
Phone 82-2-776-7844 Fax 82-2-753-2639

YASKAWA ELECTRIC (SINGAPORE) PTE. LTD.
151 Lorong Chuan, #04-01, New Tech Park Singapore 556741, Singapore
Phone 65-282-3003 Fax 65-289-3003

YATEC ENGINEERING CORPORATION
Shen Hsiang Tang Sung Chiang Building 10F 146 Sung Chiang Road, Taipei, Taiwan
Phone 886-2-2563-0010 Fax 886-2-2567-4677

BEIJING OFFICE
Room No. 301 Office Building of Beijing International Club, 21
Jianguomenwai Avenue, Beijing 100020, China
Phone 86-10-6532-1850 Fax 86-10-6532-1851

SHANGHAI OFFICE
27 Hui He Road Shanghai 200437 China
Phone 86-21-6553-6600 Fax 86-21-6531-4242

YASKAWA JASON (HK) COMPANY LIMITED
Rm. 2909-10, Hong Kong Plaza, 186-191 Connaught Road West, Hong Kong
Phone 852-2803-2385 Fax 852-2547-5773

TAIPEI OFFICE
Shen Hsiang Tang Sung Chiang Building 10F 146 Sung Chiang Road, Taipei, Taiwan
Phone 886-2-2563-0010 Fax 886-2-2567-4677

SHANGHAI YASKAWA-TONGJI M & E CO., LTD.
27 Hui He Road Shanghai China 200437
Phone 86-21-6531-4242 Fax 86-21-6553-6060

BEIJING YASKAWA BEIKE AUTOMATION ENGINEERING CO., LTD.
30 Xue Yuan Road, Haidian, Beijing P.R. China Post Code: 100083
Phone 86-10-6233-2782 Fax 86-10-6232-1536

SHOUGANG MOTOMAN ROBOT CO., LTD.
7, Yongchang-North Street, Beijing Economic Technological Investment & Development Area,
Beijing 100076, P.R. China
Phone 86-10-6788-0551 Fax 86-10-6788-2878

YASKAWA ELECTRIC CORPORATION

YASKAWA

Specifications are subject to change without notice
for ongoing product modifications and improvements.

SIE-C815-12.2C
© Printed in Japan May 1998 86-10 0.005YO ⑥
584-262, 586-242